

THE JOURNAL
OF
EXPERIMENTAL MEDICINE

EDITED BY

PEYTON ROUS

HERBERT S. GASSER

RENÉ DUBOS

VOLUME NINETIETH

WITH FORTY-ONE PLATES AND ONE HUNDRED AND
NINE FIGURES IN THE TEXT



NEW YORK
THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH
1949

COPYRIGHT, 1949, BY THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH

CONTENTS

No. 1, JULY 1, 1949

PAGE

HENLE, WERNER. Studies on host-virus interactions in the chick embryo-influenza virus system. I. Adsorption and recovery of seed virus. . . .	1
HENLE, WERNER. Studies on host-virus interactions in the chick embryo-influenza virus system. II. The propagation of virus in conjunction with the host cells	13
HENLE, WERNER, and HENLE, GERTRUDE. Studies on host-virus interactions in the chick embryo-influenza virus system. III. Development of infectivity, hemagglutination, and complement fixation activities during the first infectious cycle.	23
UNGAR, GEORGES, and MIST, SHIRLEY H. Observations on the release of serum fibrinolysin by specific antigen, peptone, and certain polysaccharides.	39
RAFFEL, SIDNEY, ARNAUD, LOUIS E., DUKES, C. DEAN, and HUANG, JWO S. The rôle of the "wax" of the tubercle bacillus in establishing delayed hypersensitivity. II. Hypersensitivity to a protein antigen, egg albumin. Plates 1 and 2.	53
GYÖRGY, PAUL, and GOLDBLATT, HARRY. Treatment of experimental dietary cirrhosis of the liver in rats. Plate 3.	73
WOOD, W. BARRY, JR., and SMITH, MARY RUTH. The inhibition of surface phagocytosis by the capsular "slime layer" of <i>Pneumococcus</i> Type III. Plates 4 and 5.	85

No. 2, AUGUST 1, 1949

GRAHAM, JOHN B., BUCKWALTER, JOSEPH A., HARTLEY, L. J., and BRINKHOUS, KENNETH M. Canine hemophilia. Observations on the course, the clotting anomaly, and the effect of blood transfusions.	97
LIGHT, JACOB S., and HODES, HORACE L. Isolation from cases of infantile diarrhea of a filtrable agent causing diarrhea in calves.	113
KINNEY, THOMAS D., HEGSTED, D. MARK, and FINCH, CLEMENT A. The influence of diet on iron absorption. I. The pathology of iron excess. Plate 6.	137
HEGSTED, D. MARK, FINCH, CLEMENT A., and KINNEY, THOMAS D. The influence of diet on iron absorption. II. The interrelation of iron and phosphorus.	147
EHRLICH, WILLIAM E., DRABKIN, DAVID L., and FORMAN, CAROLYN. Nucleic acids and the production of antibody by plasma cells. Plate 7. . .	157

HARRIS, T. N., and HARRIS, SUSANNA. Histochemical changes in lymphocytes during the production of antibodies in lymph nodes of rabbits. Plate 8.	169
---	-----

No. 3, SEPTEMBER 1, 1949

CHEEVER, F. SARGENT, DANIELS, JOAN B., PAPPENHEIMER, ALWIN M., and BAILEY, ORVILLE T. A murine virus (JHM) causing disseminated encephalomyelitis with extensive destruction of myelin. I. Isolation and biological properties of the virus.	181
BAILEY, ORVILLE T., PAPPENHEIMER, ALWIN M., CHEEVER, F. SARGENT, and DANIELS, JOAN B. A murine virus (JHM) causing disseminated encephalomyelitis with extensive destruction of myelin. II. Pathology. Plates 9 to 18.	195
OLITSKY, PETER K., and YAGER, ROBERT H. Experimental disseminated encephalomyelitis in white mice. Plates 19 and 20.	213
PORTER, KEITH R., and HAWN, CLINTON VAN ZANDT. Sequences in the formation of clots from purified bovine fibrinogen and thrombin: a study with the electron microscope. Plates 21 to 23.	225
BATSON, H. C. The relative significance of graded immunizing and challenge doses in measuring the potency of vaccines. A study of mouse protection by typhoid vaccine.	233
MILLER, ELIZABETH M., and GOEBEL, WALTHER F. Studies on bacteriophage. I. The relationship between the somatic antigens of <i>Shigella sonnei</i> and their susceptibility to bacterial viruses.	255
SOLOMON, DAVID H., GARDELLA, JOSEPH W., FANGER, HERBERT, DETHIER, FRANCES M., and FERREBEE, JOSEPH W. Nephrotoxic nephritis in rats. Evidence for the glomerular origin of the kidney antigen. Plates 24 and 25.	267

No. 4, OCTOBER 1, 1949

YUILE, C. L., BLY, C. G., STEWART, W. B., IZZO, A. J., WELLS, J. C., and WHIPPLE, GEORGE H. Plasma and red cell radioiron following intravenous injection. Turpentine abscesses in normal and anemic dogs. ...	273
DE ROBERTIS, E., and SCHMITT, F. O. An electron microscope study of nerves infected with human poliomyelitis virus. Plates 26 to 28.	283
DE ROBERTIS, E. An electron microscope analysis of nerves infected with the B virus. Plates 29 to 31.	291
MILLER, L. L., BALE, W. F., YUILE, C. L., MASTERS, R. E., TISHKOFF, GARSON H., and WHIPPLE, GEORGE H. The use of radioactive lysine in studies of protein metabolism. Synthesis and utilization of plasma proteins.	297

BALE, W. F., YUILE, C. L., DELAVERGNE, L., MILLER, L. L., and WHIPPLE, GEORGE H. Hemoglobin labeled by radioactive lysine. Erythrocyte life cycle.....	315
WAGNER, ROBERT R., BENNETT, IVAN L., JR., and LEQUIRE, VIRGIL S. The production of fever by influenzal viruses. I. Factors influencing the febrile response to single injections of virus.....	321
BENNETT, IVAN L., JR., WAGNER, ROBERT R., and LEQUIRE, VIRGIL S. The production of fever by influenzal viruses. II. Tolerance in rabbits to the pyrogenic effect of influenzal viruses.....	335
STEIGMAN, ALEX J., and SABIN, ALBERT B. Antibody response of patients with poliomyelitis to virus recovered from their own alimentary tract.	349

No. 5, NOVEMBER 1, 1949

BERNHEIMER, ALAN W. Formation of a bacterial toxin (streptolysin S) by resting cells.....	373
GINSBERG, HAROLD S., and HORSFALL, FRANK L., JR. A resistant variant of mumps virus. Multiplication of the variant in the presence of inhibitory quantities of Friedländer bacillus polysaccharide.....	393
AIRENS, EDWARD H., JR., and KUNKEL, HENRY G. The stabilization of serum lipid emulsions by serum phospholipids.....	409
KRUSE, HEINZ, and McMASTER, PHILIP D. The distribution and storage of blue antigenic azo proteins in the tissues of mice. Plates 32 to 34....	425
McKEE, FRANK W., HYATT, ROBERT E., WILT, WILLIAM G., JR., TISHKOFF, GARSON H., and WHIPPLE, GEORGE H. Protein metabolism and exchange as influenced by constriction of the vena cava. II. Effects of parenterally administered plasma, amino acid mixture, and ascitic fluid, and of orally administered ascitic fluid in the experimental ascitic dog.....	447
HAWKINS, W. B., HANSON, P. C., COON, R. W., and TERRY, R. Bile salt metabolism as influenced by pure amino acids and casein digests....	461
GINSBERG, HAROLD S., and HORSFALL, FRANK L., JR. A labile component of normal serum which combines with various viruses. Neutralization of infectivity and inhibition of hemagglutination by the component..	475
SMITH, RALPH O. Lymphatic contractility. A possible intrinsic mechanism of lymphatic vessels for the transport of lymph.....	497

No. 6, DECEMBER 1, 1949

STAMLER, J., KATZ, L. N., and ROBBARD, S. Serial renal clearances in dogs with nephrogenic and spontaneous hypertension. Plates 35 and 36....	511
MILLER, ZEILMA BAKER, DAVISON, CLARKE, and SMITH, PAUL K. The effect of podophyllotoxin on tissue metabolism and enzyme systems.....	525

	PAGE
MCCARTY, MACLYN. The inhibition of streptococcal desoxyribonuclease by rabbit and human antisera.....	543
SMITH, RALPH O., and WOOD, W. BARRY, JR. Cellular mechanisms of anti-bacterial defense in lymph nodes. I. Pathogenesis of acute bacterial lymphadenitis. Plates 37 and 38.....	555
SMITH, RALPH O., and WOOD, W. BARRY, JR. Cellular mechanisms of anti-bacterial defense in lymph nodes. II. The origin and filtration effect of granulocytes in the nodal sinuses during acute bacterial lymphadenitis. Plate 39.....	567
WISSLER, ROBERT W., SMULL, KATHARINE, and LESH, JAMES B. The effects of various horse serum fractions in producing cardiovascular and renal lesions in rabbits. Plates 40 and 41.....	577
EAGLE, HARRY. The effect of the size of the inoculum and the age of the infection on the curative dose of penicillin in experimental infections with streptococci, pneumococci, and <i>Treponema pallidum</i>	595
INDEX TO VOLUME 90.....	609

STUDIES ON HOST-VIRUS INTERACTIONS IN THE CHICK EMBRYO-INFLUENZA VIRUS SYSTEM*

I. ADSORPTION AND RECOVERY OF SEED VIRUS

By WERNER HENLE, M.D.

(From The Children's Hospital of Philadelphia (Department of Pediatrics, School of Medicine, University of Pennsylvania), Philadelphia)

(Received for publication, January 4, 1949)

Most studies on the interrelationships between animal viruses and their respective hosts have been restricted to an analysis of the response to infection of the host animal as a whole, or of the affected organs. If one could study host-virus interactions in individual host cells, or groups of identical cells, it is obvious that much could be learned regarding the mechanism of infection. There are not many animal host-virus systems available at present which lend themselves as readily to such analyses as do bacterial host-virus systems, but the entodermal layer of the allantoic sac of the developing chick embryo infected with influenza virus provides an approach to such a system, although it is far from ideal.

In the analysis of the mechanism of infection of the cells lining the allantoic cavity of the chick embryo by influenza virus, one may reason, *a priori*, that the infectious process is divided into at least four major steps: (a) adsorption of the virus onto the host cells; (b) entrance of the virus into the cells;¹ (c) propagation of the virus within the host cells;¹ and (d) liberation of the newly formed virus from the cells. This division is supported, in part, by a number of previous studies which have been concerned predominantly with one or the other of the phases of the infectious cycle (1-3).

It is the aim of this series of studies to analyze further the individual steps

* The work described in this paper has been supported by a grant-in-aid from the United States Public Health Service.

¹ Although it has not been definitely proven that the influenza viruses propagate within the host cells, the following points may be cited in favor of such an assumption: intracellular multiplication has been demonstrated for other agents of this class, and it is unlikely that the influenza viruses are exceptional in this respect. The presence of antibody in the allantoic fluid does not prevent propagation of virus in the allantoic membrane (5). Irradiated, interfering influenza virus, and possibly also fully active virus, exerts a profound effect on the functions of the host cells in that it prevents further growth of the allantoic sac (3), conceivably by interaction with an enzyme system within the cell necessary for both virus and host cell growth.

of the infectious process. The first paper is concerned particularly with the adsorption of the seed virus onto the cells of the allantoic sac. The data to be presented here have in part been extracted from experiments conducted for various other purposes, which will be discussed in subsequent papers of this series (4, 5). They show that on the average, about 70 per cent of the injected virus is adsorbed onto the host cells, yet only a small percentage of the adsorbed virus can be demonstrated as active virus in suspensions of the allantoic membranes in spite of attempts to improve the yield by various means, or to find the missing virus in other structures of the egg. Thus the suggestion appears justified that the major portion of the infecting agent, upon intimate contact with the host cells, is so bound or becomes so altered as to be undetectable by infectivity titrations. The small fraction of active virus demonstrated in the tissue suspensions may represent virus which remains on the surface of the membrane and which possibly does not increase in quantity.

Materials and Methods

Preparations of Virus.—The PR8 strain of influenza A was mainly employed in these experiments, and only a few tests with the Lee strain of influenza B are included. The seed virus was prepared by inoculation of 0.2 ml. of infected allantoic fluid in dilution 10^{-7} into 10-day-old chick embryos by the allantoic route. After incubation of the eggs at $36-37^{\circ}\text{C}.$ for 48 hours, they were chilled for 1 to 2 hours at $4^{\circ}\text{C}.$, and the allantoic fluids were collected. They were distributed in 1 ml. amounts into ampules, which were sealed in an oxygen flame. After quick freezing, the ampules were stored in a dry ice chest. If 10^8 or 10^9 ID_{50} was required for injection, freshly prepared seed was used (5).

For experimental purposes, the seed culture was diluted in broth so as to contain the desired number of ID_{50} per 0.2 ml. inoculum, and injections were made by the allantoic route into 12-day-old chick embryos. Following incubation of the eggs, aliquots of the allantoic fluids were collected during the constant periods² (2), after removal of the shell over the air sac, by needle and syringe without previous chilling of the eggs. When quantitative data were needed, the remainder of the allantoic fluid was poured off and measured in a graduate cylinder. The allantoic membranes were barvested during the first 3 hours after infection in the case of the PR8 strain, and during the first 5 hours in the case of the Lee strain, corresponding to the constant periods as obtained in membrane suspensions² (4). After removal of the allantoic fluid as described, a cross-cut was made with scissors into the shell membrane and the underlying chorioallantoic tissue, the embryo, yolk sac, and albumen were discarded with precautions to sever the connections of the allantoic sac close to the unwanted structures. The allantoic sac at this stage of the embryonic development adheres to the shell membrane, and thus offers the opportunity to wash it thoroughly *in situ*. The eggs were each filled with sterile buffered saline solution (40 to 50 ml.), agitated, and the wash fluid poured off. After

² Following infection, a certain amount of seed virus is found in the allantoic fluid and in suspensions of allantoic membrane. This quantity remains constant for various periods of time until a sudden rise in infectivity is noted. The period of constancy varies, depending on the type of virus used and the material tested. In the allantoic fluid, the constant periods extend over 5 to 6 hours in the case of influenza A, and over 8 to 10 hours in the case of influenza B virus. The corresponding figures for suspensions of allantoic membranes are 4 and 6 hours, respectively.

repetition of this procedure, the membranes were removed from the shells, pooled, and washed twice more in Petri dishes containing approximately 50 ml. of buffered saline solution each. The tissue was then emulsified in chilled semimicro Waring blenders either immediately or after various periods of storage in the cold, as will be described. For each membrane, 5 ml. of buffered saline containing 100 units of penicillin and 100 μ g. of streptomycin per ml. was used. Each suspension was prepared from at least four and usually six membranes. Blending was carried out as a rule for 3 minutes, but was varied in a few instances, as will be described. Some of the suspensions were titrated in chick embryos without centrifugation; the majority, however, were clarified by spinning at 2000 R.P.M. for 20 minutes.

Titration of Virus.—The virus preparations were diluted in tenfold steps in broth containing 100 units of penicillin and 100 μ g. of streptomycin per ml. Ten- or 11-day-old chick embryos were injected with 0.5 ml. of the various dilutions. The embryos were further incubated at 36–37°C. for 72 hours when 0.4 ml. of allantoic fluid was removed from each egg, transferred to individual test tubes, and tested for hemagglutinating activity as an indication of the presence of virus by addition of 0.2 ml. of a suspension of 1 per cent chicken red cells. The 50 per cent infectivity end-points were determined according to Reed and Muench. For titrations of the seed used in the various experiments, ten embryos were employed per dilution, for the experimental preparations, five each. However, since most of the data recorded in this paper are part of experiments to be discussed subsequently, usually two to five titrations during the constant periods were available which were combined for this analysis. Thus, the figures given for the experimental groups are based on titrations with at least ten and sometimes with up to twenty-five eggs per dilution.

Calculations.—In order to determine the degree of adsorption of the injected virus onto the host cells, the following data became available in the tests: (a) the amount of seed virus injected; (b) the quantity of free virus in the allantoic fluid during the constant period; i.e., the ID_{50} /ml. found multiplied by the number of milliliters collected from these eggs. Subtraction of (b) from (a) corresponds to the amount of virus presumably adsorbed. The total amount of virus in the allantoic membrane was calculated by multiplying the ID_{50} /ml. by the volume of suspension (5 ml. per egg membrane).

EXPERIMENTAL

A few data on adsorption of influenza virus onto the cells lining the allantoic sac have been included in previous publications employing either the hemagglutination test (1, 3) or infectivity titration for assay (2). Additional information concerning this phase has been accumulating in subsequent experiments devised for other purposes (4, 5). As can be seen in Table I, in twenty-seven experiments employing the PR8 strain and eleven using the Lee strain, adsorption varied within certain limits as determined by the difference between the number of ID_{50} injected and the number of ID_{50} recovered free in the allantoic fluid of the injected eggs during the constant period. Average adsorption amounted to about 70 per cent of the injected seed virus, with a maximum at 96 and a minimum at 42 per cent.

It was expected that the degree of adsorption would vary to some extent with the quantity of virus injected. However, within the range of ID_{50} employed as inoculum, the average percentage of adsorption did not differ significantly, as seen in Table II, and the same extent of variation was noted regardless of whether 10^3 or 10^2 ID_{50} was injected.

The difference between the amount of seed virus injected and the quantity of virus recovered in the allantoic fluids of the injected eggs during the constant periods was relatively small in terms of logarithmic units, as seen in Table III. The average difference amounted to log 0.40, minimally 0.24 and maximally 0.63. The accuracy of such infectivity titrations has been studied extensively by Knight (6), who found on statistical analysis of replicate titrations of preparations of influenza virus that the chances are 19 out of 20 that differences in end-points of 0.37 and 0.62 logarithmic unit are significant in titrations employing ten embryos and five embryos per dilution, respectively. In the

TABLE I
Adsorption of Influenza Virus by the Allantoic Sac

Strain	No. of tests	Adsorption of injected virus		
		Average	Maximal	Minimal
		<i>per cent</i>	<i>per cent</i>	<i>per cent</i>
PR8.....	27	71	95	44
Lee.....	11	73	96	42

TABLE II
Relation of Concentration of Inoculum to Degree of Adsorption

Range of inocula (ID ₅₀)	Strain of virus			
	PR8		Lee	
	No. of tests	Adsorbed	No. of tests	Adsorbed
		<i>per cent</i>		<i>per cent</i>
10 ^{8.0} -10 ^{9.9}	7	65	1	81
10 ^{6.0} -10 ^{7.9}	7	71	1	72
10 ^{4.0} -10 ^{5.9}	8	80	4	87
10 ^{2.0} -10 ^{3.9}	5	64	5	62

experiments presented, the results of the seed titrations, using ten embryos per dilution, were compared with the combined results of two to five titrations of various allantoic fluids collected from the injected eggs during the constant periods. These employed five embryos each per dilution, and were corrected for the volume of fluid found in order to obtain the total amount of virus recovered. Although the recorded differences may seem to fall into the border region of statistical significance, the following points should be taken into account in judging the validity of the conclusions tendered: (a) All experiments showed differences in the same direction. These included the sixteen tests shown in Table III, which involved titrations of both the allantoic fluids and of suspensions of allantoic membranes, and an additional twenty-two

experiments in which only the allantoic fluids were studied. Thus, in thirty-eight experiments, the same trend was noted. (b) The results of the several five embryo titrations of the allantoic fluids harvested during the constant periods of the individual experiments, which were corrected for the total volume collected and which were combined for this analysis, agreed within log 0.25 on the average, with a maximal spread of log 0.50. On occasion, if only

TABLE III

Comparison between Virus Calculated to Be Adsorbed onto and Virus Actually Found in the Allantoic Membrane

Strain of virus	ID ₅₀ injected	ID ₅₀ * found in allantoic fluid	Difference log	ID ₅₀ adsorbed†	ID ₅₀ found in allantoic membrane	Adsorbed virus	Injected virus
						per cent	per cent
PR8	10 ^{8.80}	10 ^{8.87}	0.63	10 ^{8.43}	10 ^{7.80}	1.3	1.0
	10 ^{8.87}	10 ^{8.83}	0.42	10 ^{8.84}	10 ^{7.78}	5.2	3.2
	10 ^{8.88}	10 ^{8.88}	0.34	10 ^{8.87}	10 ^{7.18}	1.6	0.9
	10 ^{8.15}	10 ^{8.11}	0.63	10 ^{8.03}	10 ^{7.70}	4.7	3.5
	10 ^{8.08}	10 ^{8.71}	0.37	10 ^{8.12}	10 ^{7.82}	5.1	2.8
	10 ^{8.15}	10 ^{7.81}	0.33	10 ^{7.87}	10 ^{6.08}	1.7	0.9
	10 ^{8.09}	10 ^{7.81}	0.26	10 ^{7.72}	10 ^{6.20}	3.8	1.7
	10 ^{7.16}	10 ^{6.90}	0.25	10 ^{6.79}	10 ^{5.35}	3.7	1.6
	10 ^{7.08}	10 ^{6.70}	0.39	10 ^{6.83}	10 ^{5.32}	3.0	1.8
	10 ^{6.96}	10 ^{6.80}	0.56	10 ^{6.25}	10 ^{4.10}	1.5	1.1
	10 ^{6.10}	10 ^{6.77}	0.33	10 ^{6.83}	10 ^{4.50}	4.8	2.5
	10 ^{6.08}	10 ^{6.71}	0.37	10 ^{6.82}	10 ^{4.11}	2.0	1.1
	10 ^{5.83}	10 ^{6.89}	0.24	10 ^{5.58}	10 ^{3.90}	2.6	0.9
	10 ^{6.42}	10 ^{6.88}	0.45	10 ^{6.47}	10 ^{3.70}	2.7	1.8
Lee	10 ^{4.96}	10 ^{4.03}	0.33	10 ^{4.18}	10 ^{2.83}	1.6	0.9
	10 ^{4.61}	10 ^{4.81}	0.60	10 ^{4.28}	10 ^{3.10}	1.1	0.8
Average.....			0.40			2.8	1.6

* ID₅₀ per ml. multiplied by the volume of allantoic fluid collected.

† Determined by the difference between the values shown in columns 2 and 3.

two titrations were performed, identical results were obtained. Thus, these results fell well within the range of reproducibility given by Knight for employing this number of embryos per dilution, in spite of the additional variable in measuring the total volume of allantoic fluid present in the injected eggs. The amounts of fluid found in individual eggs as well as the averages of pooled fluids from different groups of eggs in an individual experiment showed variations within a range of from 8 to 10 ml. Small quantities of allantoic fluid were retained by the eggs, but these appeared negligible considering the large volumes of fluid present in 12-day-old embryos. This error possibly was

counteracted by the addition to the allantoic fluids of small amounts of blood, or the occasional inadvertent admixture of some amniotic fluid. (c) The same order of difference between the amount of seed virus injected and that recovered was noted in experiments in which the quantity of seed varied over a wide range; *i.e.*, the difference was independent of the number of tenfold dilutions required to reach the end-point of infectivity.

These various considerations of the limitations of the technics employed fail to discredit the conclusion that the average value of adsorption of 70 per cent is probably nearly correct. In order to establish this value more firmly, it was thought advisable to determine the amount of virus that could be demonstrated in suspensions of allantoic membranes following adsorption. However, when such tissue preparations were titrated in chick embryos simultaneously with the allantoic fluids collected from the same eggs, it was found that only a small percentage of the amount of virus calculated to be adsorbed could be demonstrated. As seen in Table III, only between 1 and 5 per cent of the adsorbed, or 0.8 to 3.5 per cent of the injected virus could thus be found. The limitations of experimental procedure and accuracy discussed above hold, of course, also for these tests. Additional sources of variation are to be found in the fact that the allantoic sacs may, to some extent, vary in size at this stage of development. Furthermore, this tissue may not be separable in its entirety, and small fragments of it may escape with the other structures of the egg when they are discarded. However, these additional sources of error could hardly account for the extent of the discrepancies in the virus assay.

Attempts to clarify this problem may be divided into several steps: efforts (a) to demonstrate an antiviral effect in allantoic fluid; (b) to improve the handling of the tissue and with it, the yield of virus; (c) to search for an inhibitor of virus activity in the tissues; (d) to demonstrate a loss of virus in the process of preparing membrane suspensions; (e) to find virus in other structures of the egg as a result of possible rapid resorption of the agent; and (f) to determine whether the non-adsorbed seed virus differed from the adsorbed agent in properties leading to the combination with the host tissue.

It was considered unlikely that allantoic fluids of 12-day-old embryos possess antiviral activities in view of the stability of infectivity in this medium (7), and the constancy of the virus titer in the allantoic fluid during the first few hours after infection (2). In agreement with this past experience, addition of known amounts of virus to normal allantoic fluid of 12-day-old chick embryos *in vitro* and incubation at 37°C. for 1 to 6 hours, did not reduce the infectivity as compared with that of control preparations of virus in broth. This result is in agreement with recent observations by Svedmyr (8) and by Hardy and Horsfall (9) who demonstrated the presence in normal allantoic fluids of a component which may prevent hemagglutination but apparently does not affect infectivity.

All attempts to increase the yield of virus from allantoic sacs have failed. It did not matter whether the suspensions of the tissues were prepared immediately following harvest or after the membranes had been stored in the cold at 4°C. for 24 hours, or at -15°C. for several days; the results of the titrations in chick embryos gave figures well within the accuracy of the technic. Variation in the method of emulsification of the tissue, likewise, failed to increase the virus titer. Grinding of the tissue with mortar and pestle, using alundum as abrasive, was inferior to the use of the Waring blender. Varying the time of blending, it could be seen (Table IV) that after 1 minute, and regularly after 3, maximal titers were obtained, and further treatment in the blender did not release significant quantities of additional virus. Microscopic examination of smears prepared from such suspensions revealed only occasional individual or small clusters of intact cells. Blending for 3 minutes was adopted

TABLE IV

Effect of Variation in the Time of Grinding in the Waring Blender on the Yield of Virus (PR8) from Allantoic Membranes

Preparation No.	IU ₅₀ per ml.			
	Run in Waring blender for			
	1 min.	3 min.	6 min.	10 min.
1	—	10 ^{0.97}	10 ^{0.93}	—
2	—	10 ^{0.97}	10 ^{0.80}	—
3	10 ^{2.70}	10 ^{2.49}	—	10 ^{2.36}
4	10 ^{1.43}	—	—	10 ^{1.80}
5	10 ^{1.80}	10 ^{5.47}	—	10 ^{1.75}

as the routine procedure. Repeated freezing at -70°C. and thawing at 37°C. prior to emulsification did not alter the results. Some of the crude tissue suspensions were exposed to intense sonic vibration³ for periods up to 60 minutes. This procedure, which does not affect the titers of infectivity and hemagglutination of virus contained in allantoic fluid, did not improve the yield in the tissue emulsions (Table V), although the debris sedimentable by low speed centrifugation at 2000 R.P.M. for 20 minutes was minimal as compared to the sediment obtained from non-treated suspensions, indicating the more complete emulsification of the tissues. Crude suspensions were kept at 37°C. for 1 to 2 hours to effect any possible elution of virus from tissue fragments or dissociation of virus aggregates, again to no avail. Suspensions of tissue were incubated at 37°C. for 4 hours with 0.01 per cent trypsin.⁴ The virus titers of

³ The sonic oscillator used was manufactured by the Raytheon Manufacturing Company, Boston.

⁴ The amount of trypsin used was sufficient to digest in 1 hour at 37°C. a 2 per cent solution of gelatin to such an extent that it no longer solidified at 4°C.

the digested preparations were similar to those of the controls not treated with the enzyme. When centrifuged and non-centrifuged suspensions of allantoic membrane were compared in their infectivity, no significant differences in titer were noted (Table VI), and the sediments contained less activity than the supernate. Centrifugation at 2000 R.P.M. for 20 minutes was, therefore, adopted as routine procedure. The virus titer in suspensions of membranes was quite stable at 4°C., and it did not matter whether titrations were done

TABLE V

Effect of Sonic Vibration on Yield of Virus (PR8) in Suspensions of Allantoic Membranes

Preparation No.	ID ₅₀ per ml.				
	Sonic vibration for				
	0 min.	3 min.	10 min.	30 min.	60 min.
1	10 ^{1.20}	10 ^{1.80}	10 ^{1.47}	—	—
2	10 ^{3.80}	10 ^{3.93}	10 ^{3.80}	—	—
3	10 ^{3.47}	—	10 ^{3.47}	—	—
4	10 ^{2.68}	—	—	10 ^{2.13}	10 ^{2.80}
5	10 ^{2.80}	—	10 ^{3.13}	10 ^{3.42}	10 ^{2.80}
6	10 ^{2.93}	—	10 ^{2.97}	10 ^{2.80}	10 ^{2.78}
7	10 ^{5.23}	—	10 ^{5.47}	10 ^{5.30}	10 ^{5.30}

TABLE VI

Effect of Centrifugation on Titer of Virus (PR8) in Suspensions of Allantoic Membranes

Preparation No.	ID ₅₀ per ml.	
	Not centrifuged	Centrifuged 20 min. at 2000 R.P.M.
1	10 ^{3.47}	10 ^{3.13}
2	10 ^{3.47}	10 ^{3.80}
3	10 ^{2.80}	10 ^{2.68}
4	10 ^{2.93}	10 ^{2.98}
5	10 ^{5.13}	10 ^{5.47}

immediately following preparation or after storage for 1 to 2 weeks at 4°C. (Table VII). This stability permitted repetition of titrations in case unexpected or questionable results were obtained in the first assay.

Another set of experiments was directed toward the demonstration of inhibitors of virus activity in the tissues. To avoid admixture of red blood cells or fragments thereof, as well as of serum which frequently contains a non-specific inhibitor of the hemagglutinating activity (10-12), membranes were perfused with buffered saline solution before harvest. Comparison of suspensions of perfused and non-perfused membranes did not reveal a significant difference in

virus titer. Addition of known amounts of virus to normal membranes immediately before blending or after their emulsification and subsequent titration of the preparations gave titers closely similar to those obtained with the same amount of virus added to broth in the same proportion.

As a further possibility, it was considered that virus may be eluted from the tissue in the process of preparation. Although elution has not been demonstrated as yet from the allantoic sac of the living chick embryo, it does occur when the tissue is killed by formalin (13). It was possible, therefore, that during the washing of the membrane, conditions became favorable for elution. However, titration of the first and second wash waters yielded quantities of virus corresponding to about 1 and 0.1 per cent, respectively, of the total amount in the allantoic fluids, indicating that the amount of virus found in the wash water most likely corresponded to the amount of allantoic fluid left in the eggs when washing commenced.

TABLE VII

Stability of Suspensions of Allantoic Membranes Infected with Influenza Virus (PR8)

No. of test	Time after preparation days	ID ₅₀ per ml.		
		Suspension No.		
		1	2	3
1	1	$10^{2.43}$	$10^{2.36}$	$10^{1.86}$
2	7	$10^{2.43}$	$10^{2.33}$	$10^{1.83}$
3	14	$10^{1.83}$	$10^{2.80}$	$10^{1.30}$
4	18	$>10^{2.50}$	—	—

Finally, attempts were made to demonstrate virus in structures other than the allantoic membrane, in view of the possibility that some of the virus might become rapidly resorbed. However, no evidence for such an occurrence has been obtained in the past (3), and the present experiments have confirmed these data. No virus was found in the blood withdrawn from the embryos in the first few hours after infection. Suspensions of embryo and yolk sac contained less than 1 per cent of the activity of the allantoic fluids of the corresponding eggs, and it is likely that this amount reflected the degree of contamination of the test tissues with residual allantoic fluid during harvest.

The uniformly unrevealing tests presented above suggested that the seed virus left free in the allantoic fluid during the constant period might differ from that adsorbed onto the tissues by its combining properties. However, when allantoic fluids, collected 2 hours after injection of high titered seed, were employed for subculture, it was found that again about 70 per cent of the virus was adsorbed within 1 hour after injection. The constant period, likewise,

conformed to the usual experience in that 6 hours elapsed until new generations of virus were released into the allantoic fluid.

DISCUSSION

The data presented have shown that regardless of the quantity of virus used, about 30 per cent of the influenza virus injected into chick embryos by the allantoic route remains free in the allantoic fluid of the infected eggs. Since all attempts to demonstrate in allantoic fluid an inhibitor for the infectivity of virus particles have failed, it must be concluded that the remaining 70 per cent of the seed virus has been adsorbed onto the tissues of the allantoic sac. Adsorption of influenza virus onto red cells usually is far more complete (14) probably as a result of the fact that the virus and adsorbing cell are both suspended and intermixed in the same medium, offering a greater chance for the agents to collide. In the allantoic sac system, contact between virus and host cells can be made only at the fluid-tissue interface. The equilibrium between adsorbed and free virus is established usually within one-half to 1 hour after infection (2).

Attempts to demonstrate the adsorbed virus in suspensions of allantoic membrane met with only partial success. It has been impossible to detect more than 1 to 5 per cent of the amount of virus, and all efforts to improve the yield have failed. These included: emulsification of the tissues in the Waring blender for extended periods of time; exposure of the crude suspensions to intense sonic vibration which resulted in more complete emulsification; digestion of the crude suspensions with trypsin; incubation of the emulsions at 37°C. for 1 to 2 hours to effect elution of virus from tissue debris; perfusion of the tissue prior to harvest in order to avoid admixture of inhibitors possibly present in the blood stream; search for inhibitors of viral activities in suspensions of normal allantoic sacs; and, finally, exclusion of possible resorption of virus and spread to other structures of the chick embryo. None of these tests has furnished a clue to the missing virus.

There remain three possibilities to be considered: (a) The methods of emulsification are not effective enough as yet to disrupt all the infected cells or to free all the virus from fragments of the tissue, so that it escapes detection. (b) Although emulsions of the tissue do not reveal an inhibitor for virus activity, the intact cells may be able to cause inactivation of some of the seed virus. In that case, the missing virus would have to be considered waste, and the active virus found in the tissue would correspond to the "infecting" agent. Finally, (c), the seed virus, upon the intimate contact with the host cells which leads to propagation, becomes, as a result, altered in such a way that it can no longer be demonstrated. The active virus, in this case, would represent "superficially adsorbed" virus which does not increase in quantity. This last point gains in importance, in view of the fact that a major portion

of the active virus in the membrane is accessible to the action of neutralizing antibody, as will be demonstrated in a subsequent paper of this series (5). The last point appears to be borne out, too, by results obtained in bacterial host-virus systems in which it has been found impossible, thus far, to recover the infecting agent from the host cell in the early stages of the infectious cycle (15).

SUMMARY

Upon injection of active influenza A or B virus into the allantoic cavity of the developing chick embryo, an average of only 70 per cent of the agent was adsorbed onto the tissue, as measured by the difference between the quantity of virus injected and that found free in the allantoic fluid of the injected eggs during the constant period. The degree of adsorption was similar, regardless of whether 10^9 or 10^2 ID₅₀ of active virus was injected.

Attempts to demonstrate the adsorbed virus in suspensions of the infected tissue met with partial success only in that not more than 1 to 5 per cent of the amount calculated to be adsorbed was actually found. All efforts to increase the yield of virus have failed. These results led to the suggestion that the seed virus, which participates in the propagation, becomes altered in such a way that it no longer may be demonstrated by infectivity titrations, whereas the active virus found represents superficially adsorbed virus, which does not multiply.

BIBLIOGRAPHY

1. Henle, W., and Henle, G., *J. Exp. Med.*, 1947, 85, 347.
2. Henle, W., Henle, G., and Rosenberg, E. B., *J. Exp. Med.*, 1947, 86, 423.
3. Henle, W., Henle, G., and Kirber, M. W., *Am. J. Med. Sc.*, 1947, 214, 529.
4. Henle, W., *J. Exp. Med.*, 1949, 90, 13.
5. Henle, W., and Henle, G., *J. Exp. Med.*, 1949, 90, 23.
6. Knight, C. A., *J. Exp. Med.*, 1944, 79, 487.
7. Henle, W., and Henle, G., *J. Exp. Med.*, 1946, 84, 639.
8. Svedmyr, A., *Ark. Kemi, Mineral. Geol.*, 1947, 24B, No. 11; *Brit. J. Exp. Path.*, 1948, 29, 295, 309.
9. Hardy, P. H., Jr., and Horsfall, F. L., Jr., *J. Exp. Med.*, 1948, 88, 463.
10. Hirst, G. K., *K. Exp. Med.*, 1942, 75, 49.
11. McCrea, J. F., *Australian J. Exp. Biol. and Med. Sc.*, 1946, 24, 283.
12. Friedewald, F. M., Miller, E. S., and Whatley, L. R., *J. Exp. Med.*, 1947, 86, 65.
13. Stonic, J., *Nature*, 1947, 159, 780; *Australian J. Exp. Biol. and Med. Sc.*, 1948, 26, 49.
14. Hirst, G. K., *J. Exp. Med.*, 1942, 76, 195.
15. Delbrück, M., *Biol. Rev.*, 1946, 21, 30.

STUDIES ON HOST-VIRUS INTERACTIONS IN THE CHICK EMBRYO-INFLUENZA VIRUS SYSTEM*

II. THE PROPAGATION OF VIRUS IN CONJUNCTION WITH THE HOST CELLS

By WERNER HENLE, M.D.

(From The Children's Hospital of Philadelphia (Department of Pediatrics, School of Medicine, University of Pennsylvania), Philadelphia)

(Received for publication, January 4, 1949)

In previous studies on the mechanism of infection of the entodermal layer of the allantoic sac of the developing chick embryo by influenza viruses, a somewhat indirect approach has been employed. It has been possible to deduce certain facts from observation of changes in the infectivity and hemagglutinating activity of allantoic fluids bathing the infected tissues. Thus it has been found that only about 70 per cent of the virus injected into the allantoic sac becomes adsorbed, as demonstrated by the difference between the quantity of virus injected and that found free in the allantoic fluid in the first few hours after infection (1). The titer of the non-adsorbed virus in the allantoic fluid remains constant for different periods of time depending on the type of virus injected. The constant periods in case of strains of influenza A virus extended over 5 to 6 hours, those of the influenza B strains over 8 to 10 hours (2, 3). At the end of these periods, during which it is presumed that the agents are propagating in association with the host cells, the titer suddenly increases as newly formed virus is liberated, terminating the first cycle. The released virus will immediately initiate a second cycle as part of it is adsorbed onto some of the residual non-infected host cells. If adsorption is prevented by the presence of irradiated interfering heterologous virus, injected during the constant periods, all the released virus remains free in the allantoic fluid. Consequently, information has been gained as to the amount of virus liberated into the allantoic fluid as a result of adsorption of one ID_{50} of seed virus (2, 3). The injection of homologous irradiated virus during the constant periods, however, prevented or delayed the appearance of virus in the allantoic fluid either through inhibition of formation or of liberation of virus.

It is obvious that much could be learned about the infectious process if one could follow the course of infection within the allantoic membrane during the time corresponding to the constant periods in the allantoic fluid. It is the aim of this and the subsequent papers of this series to summarize studies on the development of virus activities in the allantoic tissue.

* The work described in this study was supported by a grant-in-aid from the United States Public Health Service.

Materials and Methods

Most of the pertinent technics for the preparation of materials and the experimental procedures have been discussed in previous papers (1, 2). It suffices, therefore, to outline briefly the general procedure of the growth curve experiments to be reported.

An adequate number of 12-day-old chick embryos was injected at t_0 time with 0.2 ml. of suitably diluted allantoic fluid containing either the PR8 strain of influenza A or the Lee strain of influenza B virus. In some experiments or experimental groups, this was the only injection given. In others, a second injection of 0.5 ml. of homologous or heterologous virus inactivated by ultraviolet irradiation was administered one-half hour after the infecting dose. These latter preparations were obtained by sedimenting the virus from allantoic fluid by high speed centrifugation at 20,000 R.P.M. for 20 minutes, and resuspending the sediment in one-eighth volume of the supernatant fluid. The concentrates were dialyzed against 20 volumes of buffered saline solution and irradiated by ultraviolet light for a sufficient length of time, as determined by preliminary tests, to destroy infectivity but to leave the interfering property largely intact (4). As a rule, 0.5 ml. of these preparations diluted at least 1:27 prevented propagation of subsequently injected active virus (about 10^5 ID₅₀) to such an extent as to prevent formation of measurable amounts of hemagglutinins. In earlier experiments, the materials were injected into the allantoic cavity through the air space, in later tests, through holes drilled into the shell at the side of the eggs a few millimeters below the limit of this space, a separate hole being used for each injection. An additional hole was made over the air sac for the relief of pressure. Care was taken to inoculate through areas of chorioallantoic membrane free of blood vessels. After each injection, the corresponding hole was sealed with nail polish. By this technic, flooding of the shell membrane at the air sac end caused by back-flow of fluid through the punctures was avoided, thus preventing the occasional deaths of embryos due to this occurrence. The injections were performed at intervals in order to allow for the harvest of the individual groups of eggs at the precise time planned. The trays of eggs were returned to the incubator immediately after each injection to minimize cooling of the eggs. Harvests were made at hourly intervals, using five to six embryos per group. First, aliquots of the allantoic fluids were removed by needle and syringe and pooled according to groups, then the remainder was poured off and the total volume measured in some of the groups of eggs. Thereafter, the contents of the eggs were discarded except for the allantoic membranes which adhered to the shell. They were washed twice *in situ* with buffered saline solution before removal from the shells, and rinsed twice more with saline solution in Petri dishes. The fluids were kept at 4°C. until titrations could be made. The membranes were kept at -15°C. for a few days. They were thawed usually 1 day prior to the titrations, emulsified in ice cold Waring blenders for 3 minutes, using 5 ml. per membrane of buffered saline solution which contained 100 units of penicillin and 100 µg. of streptomycin per ml. The suspensions were clarified by centrifugation at 2000 R.P.M. for 20 minutes and kept at 4°C. until titrations were made. The titer remained constant at this temperature for at least 1 week. Titrations for infectivity were made as described (1), using five 10- or 11-day-old chick embryos per dilution in case of the experimental preparations, and ten per dilution for the titration of the seed virus. The 50 per cent infectivity end-points were calculated according to Reed and Muench. The values recorded in the figures are expressed as ID₅₀/ml. of allantoic fluid or membrane suspension.

EXPERIMENTAL

The first set of experiments to be presented was devised to assay the virus content of the allantoic membranes following infection with either the PR8 strain of influenza A or the Lee strain of influenza B, respectively. The period

under study corresponded to the constant period, as far as the infectivity of the allantoic fluids was concerned. As can be seen in Fig. 1, the virus titer, in agreement with previous reports (2), remained constant in the allantoic fluids for 6 hours in the case of the PR8 strain, and for 9 hours in that of the Lee virus. On the other hand, titration of the suspensions of allantoic membranes collected from the same eggs at the same time intervals showed that constant levels of activity were encountered only during the first 4 hours with PR8 and for the first 6 hours with the Lee strain. Thereafter, the virus content of the tissues increased rather sharply so that the titer exceeded that of

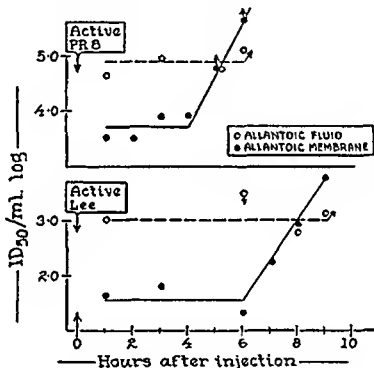


FIG. 1. Comparison of infectivity of allantoic fluids and membranes in the first 6 and 9 hours after infection with PR8 and Lee virus, respectively.

the corresponding allantoic fluids. Since the average yield of allantoic fluid at this stage of embryonic development amounts to between 8 and 10 ml., whereas the membranes were suspended in only 5 ml. of saline solution, the difference between the total amount of virus found during the constant periods in the allantoic fluids, on the one hand, and in the membranes, on the other, was of the order of log 1.4 to 1.7 in favor of the fluid. This finding emphasized again the previously demonstrated discrepancy between the amount of seed virus found in the tissues and that calculated to be adsorbed (1). The amount of non-adsorbed virus in the allantoic fluid corresponded to about 30 per cent; that found in the tissue, to only about 1 to 2 per cent of the seed, instead of the expected 70 per cent.

The effect of inactivated, interfering virus of the homologous or heterologous type upon the propagation of the active agent in conjunction with the host cells

is shown in Fig. 2. The curves shown represent the combined results of three experiments conducted with the PR8 strain, using approximately 10^4 ID₅₀ for infection. The upper part of the figure records the data obtained with the allantoic fluids which agreed with the observations previously published (2); i.e., a typical one-step growth curve in the case where heterologous irradiated virus was injected subsequent to infection; no release of virus from the infected

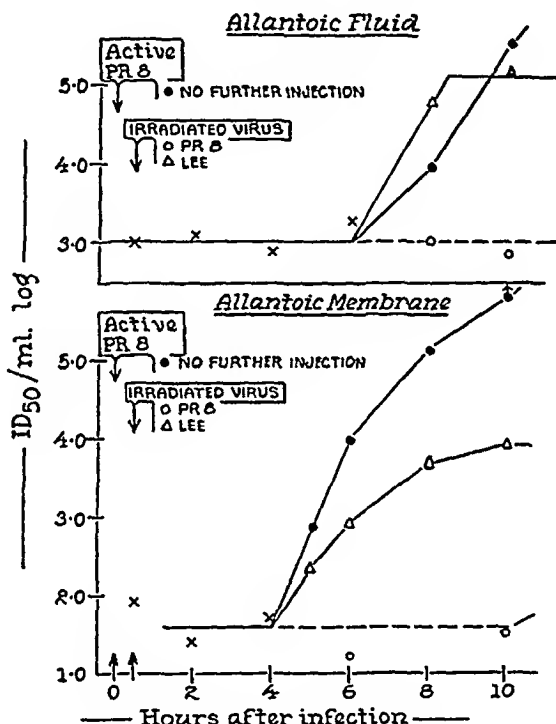


FIG. 2. The effect of injection of homologous and heterologous irradiated virus, following infection, upon infectivity curves in allantoic fluids and membranes. The crosses denote mean titers during the constant periods.

cells into the allantoic fluid in case homologous irradiated virus was used; and a somewhat slower rise in infectivity in the controls which, however, continued at an increased rate beyond the period shown in the figure. The titrations of the membranes derived from the embryos not treated with irradiated virus showed a constant period of 4 hours, followed by a sharp rise in activity. The incline of the curve fell off gradually as the time of incubation increased, but it continued to rise after the 10th hour of incubation in one of the experiments carried over a 24 hour period. If heterologous irradiated virus (Lee) was injected one-half hour after infection, the constant period in the membranes extended, likewise, over 4 hours, but the subsequent rise in infectivity was less

steep than that observed in the control curve. The divergence between the two curves became more pronounced as time proceeded, and there was no significant further increase in titer after the 10th hour of incubation. The third curve represents the results of membrane titrations after secondary injection of homologous irradiated virus, and shows that virus production was markedly suppressed. There was no rise in infectivity during the 10 hour period shown in the figure, but, thereafter, in the one experiment extending over 24 hours, a definite rise in titer occurred.

A similar experiment employing 10^4 ID₅₀ of the Lee strain as the infecting agent instead of the PR8 virus gave similar results except for the more prolonged constant periods expected from the data shown in Fig. 1. In other experiments it became apparent that the dose of active virus used was of some importance. Using 10^4 ID₅₀ of PR8 virus, results were obtained which agreed in principle with those reported above with 10^4 ID₅₀, except that suppression of propagation by homologous irradiated virus was less pronounced, and a distinct rise in infectivity became measurable in the membranes about 8 hours after infection. Little effect of the homologous inhibitor was noted when injected subsequent to infection with about 10^3 ID₅₀.

These experiments revealed a number of facts. First, the heterologous irradiated virus, which had been used for the demonstration of one-step growth curves (2, 3), is not without effect upon the propagation of active virus in the tissues of the allantoic sac. The difference in the infectivity curve of this series as compared to that of the controls is not merely the result of the prevention of additional adsorption of virus freshly released from the tissues in the case of the eggs treated with the heterologous irradiated virus. As can be seen in the figure, liberation of new virus into the allantoic fluid became measurable only after the 6th hour of incubation, whereas the difference in the amounts of active virus in the membranes was apparent as soon as the titers began to rise. The irradiated heterologous virus is able then to exert some inhibitory effect upon virus propagation in the cells after infection has taken place.

Second, not all the virus formed in the membrane is released into the allantoic fluid. When heterologous irradiated virus is injected one-half hour after infection, it is assumed that only those cells infected during that first one-half hour produce virus, and that all the other cells are rendered resistant through interference. It might be expected, then, that at the end of the intracellular growth period, the titer of the membrane would decrease, since all the cells have either just liberated virus or are resistant to the uptake of virus. However, as is evident from Fig. 2, this is not the case, but the virus curve levels off gradually and the titer remains constant thereafter. This indicates that some of the produced virus is apparently still attached to the cells of the allantoic membrane.

Finally, the experiment shows that the effect of the homologous irradiated

virus is directed toward a delay in multiplication and, usually, a reduction in the amount of virus produced, and not toward prevention of the release from the cells of virus that might have multiplied, a differentiation which could not be made by considering the data of the allantoic fluid titrations (2). The degree of inhibition depends on the size of the original inoculum of active virus; the smaller the infecting dose, the more pronounced the inhibition.

This third point raised a new question. As had been shown in a previous report (Fig. 9, reference 2), the injection of homologous irradiated virus at increasingly delayed intervals after infection with the active agent decreased successively the degree of inhibition, as measured by the liberation of increasingly larger amounts of virus into the allantoic fluid at the end of the proper constant period. For example, if, in the cited experiment, the homologous inhibitor was injected 1 hour after infection with the active Lee virus, practically no rise in virus titer was noted in the allantoic fluid at the end of the 9 hour constant period. With injection of the inhibitor 2, 3, or 4 hours after infection, the amount of virus released increased gradually, but when given after a 6 hour interval, the resulting curve corresponded to that observed following secondary injection of heterologous irradiated virus. If the titers obtained in the allantoic fluid at 10 or 12 hours after infection with the PR8 or Lee strains, respectively, are plotted against the time after infection, when the injection of homologous irradiated virus was given, the points fall reasonably well on a straight line (Fig. 3) connecting the base, which represents the titer of residual non-adsorbed seed virus, with the top line which represents the titer obtained after injection of heterologous irradiated virus.

Inspection of Fig. 3 shows then that propagation of virus may be interrupted any time up to 3 hours after infection with PR8, and up to slightly more than 4 hours after infection with the Lee strain. The figure also seems to suggest that whatever quantity of virus has been produced up to the time of interruption is liberated after the proper constant period. However, during these same periods, (see the curves presented in Figs. 1 and 2), no increase in active virus is demonstrable in the membranes. These findings seem to indicate that viral production occurs in at least two major stages. Conceivably during the first phase, immature, non-infectious forms or building blocks of virus are produced; this development can be interrupted by the homologous inhibitor within certain time limits. In phase 2, these non-infectious forms or building blocks are converted or combined into fully active virus, and this transformation cannot be interrupted by the homologous inhibitor, so that whatever amount of this immature product has been formed up to the time of interruption is subsequently demonstrable as active virus. The data imply, too, that the first stage of virus formation begins shortly after infection of the cells and is completed by the 4th to 6th hour thereafter, depending on the type of virus used. Fully active virus begins to appear only at the end of the first phase.

DISCUSSION

The studies on the propagation of influenza virus in the allantoic membrane have shown that a certain amount of the active seed virus can be demonstrated in suspensions of the tissue immediately after adsorption of the agent (1). The titer of this virus remains constant for about 4 and 6 hours after infection with the PR8 and Lee strains, respectively. Thereafter, a rapid increase in

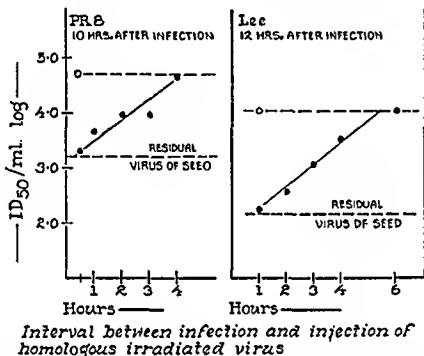


FIG. 3. The height of the virus titer in the allantoic fluid 10 to 12 hours after infection with PR8 and Lee virus, respectively, as influenced by subsequent injection of homologous irradiated virus at increasing time intervals.

infectivity is noted; *i. e.*, 2 to 3 hours before release of any virus into the allantoic fluids can be detected. Injection of irradiated heterologous virus subsequent to infection exerts a slight inhibitory effect on virus production in the tissues, whereas homologous virus may entirely prevent or delay this propagation. The slight inhibitory effect of the heterologous irradiated virus may be comparable to the "depressor effect" described by Delbrück (5), who found in studies on interference between serologically unrelated bacterial viruses that the excluded agent may decrease the yield of the infecting virus.

The quantitative aspects of virus production in the influenza virus-chick embryo system have been considered in a previous report (2). Calculations were presented concerning the yield of active virus in allantoic fluid derived from adsorption of one ID₅₀ of seed virus in the first infectious cycle (adsorption-propagation-liberation). This value amounted to about 60 ID₅₀ in the average of five experiments with the PR8 strain, and to about 35 in a similar number of tests with the Lee strain. Corresponding figures were obtained

with other strains of influenza A and B virus (3). These calculations now require some comment.

The degree of adsorption was estimated by subtracting the amount of seed virus left free in the allantoic fluid from the total amount injected. As has been pointed out in the preceding paper of this series (1), only between 1 and 5 per cent of the virus thus calculated to be adsorbed can actually be demonstrated in the allantoic tissue. If this small quantity of active virus were the "infecting agent" and the remainder of the seed "wasted," then the yield of virus per ID_{50} of seed would be 20 to 100 times the amount mentioned above; *i. e.*, 1200 to 6000 ID_{50} in the case of PR8, and 700 to 3500 ID_{50} in the case of Lee virus, quantities which conceivably still could result from the infection of one host cell. However, as will be shown in the subsequent paper of this series (6), a large part of the adsorbed active seed virus remains accessible to the action of neutralizing antibodies injected into the allantoic sac following infection without markedly affecting multiplication of virus in conjunction with the host cells. This indicates strongly, that the active seed virus found in the suspensions of the tissues collected during the constant periods may represent "superficially adsorbed" seed virus, and that the non-demonstrable part of the adsorbed virus is probably the one involved in the process of propagation. If this assumption is correct, the values given for the yield of virus per ID_{50} of seed virus would increase only very slightly.

A second point has to be considered in this connection. The calculations under discussion are based on one-step growth curve experiments in which heterologous irradiated virus was injected subsequent to infection. In case the infected eggs are not treated with irradiated virus, multiplication of the agent proceeds in the tissues at a rapid rate, but the liberated virus will spread to other susceptible cells either by continuity or *via* the allantoic fluid thus largely escaping detection and initiating the second infectious cycle before all the virus produced in the first has been released. It is obvious that no accurate information may be gained under these conditions as to the quantity of virus produced as the result of one infectious cycle. On the other hand, the secondary injection of heterologous irradiated virus inhibits the initiation of a second infectious cycle by preventing extensive adsorption of the liberated virus onto the remaining susceptible host cells and by induction of the interference phenomenon. However, this injection is not without effect upon multiplication of the virus in the first cycle, in that the curve of viral increase in the tissues is definitely lower than that found in controls not treated with heterologous irradiated virus. Thus, the yield of virus per ID_{50} of seed virus is not optimal under these conditions.

The tests with the heterologous irradiated virus also showed that not all of the virus produced is actually released into the allantoic fluid, but that part of it remains attached to the tissues. However, this quantity of virus amounts

to only a fraction of that found in the fluid at the end of the infectious cycle and, therefore, would not alter substantially the calculations discussed.

Although the quantitative aspects of virus multiplication cannot be clarified further at the present time the experiments presented may offer some insight into the mechanism of viral propagation. The data would seem to warrant the assumption that propagation of virus occurs in two major phases. Presumably in the first, non-infectious material is built, production of which is completed at about the end of the second third of the growth period in conjunction with the host tissues. Conversion into fully active virus appears to begin only then. In this regard it is of interest to note that Gard and von Magnus (7) observed in allantoic fluids infected with influenza A virus, which were obtained under certain conditions, a component differing from the fully active virus which they considered a precursor of the virus. The suggested multiphase development of influenza virus would seem to be in agreement with certain observations made in the field of bacterial viruses. By exposure of infected bacteria to radiations and subsequent assay of the remaining "infectious centers," Latarjet (8) has shown that inactivation during the first third of the intracellular growth period proceeds according to single hit curves, but that thereafter, the rate of inactivation corresponds to that of multiple hit curves. This indicates that the increase in virus material begins only in about the second third of the period. It also was found that resistance to ultraviolet and x-radiation becomes increasingly stronger during the second phase of the intracellular period, presumably by the accumulation of newly produced material which adsorbs part of the radiation (9). Chemical analyses reported by Cohen (10) showed that synthesis of virus protein begins in the bacteria immediately after infection, whereas the development of desoxyribosenucleic acid can be detected only after about one-third of the period has elapsed. The curve of nucleic acid production runs parallel to that of active virus content of the bacteria, but precedes it by a definite time interval (11).

SUMMARY

Experiments have been reported on the propagation of influenza viruses in the allantoic membrane of the developing chick embryo during the first infectious cycle.

After adsorption of the seed virus onto the host cells, only a small percentage of it remains demonstrable by infectivity titrations. This amount remains constant for 4 hours in the case of infection with PR8 virus, and for 6 hours in that of infection with Lee virus. Thereafter, a sharp rise in infectivity occurs 2 to 3 hours before liberation of the new generations of active virus into the allantoic fluid can be detected.

Injection of homologous virus, inactivated by ultraviolet irradiation, following infection prevents or delays the production of virus in the tissues,

depending to some extent upon the number of ID_{50} of active virus used as inoculum. The smaller the dose, the more pronounced the inhibitory effect.

With increasing delay in the injection of the inhibitor, progressively more virus is produced and liberated 6 and 9 hours after infection with PR8 and Lee virus, respectively. Thus, production of virus may be interrupted by the homologous inhibitor when given up to 3 hours after infection with PR8, and up to $4\frac{1}{2}$ hours after infection with Lee virus. Since no increase in infectivity can be detected during these 3 and $4\frac{1}{2}$ hour periods in the tissues, it is suggested that influenza virus propagates in at least two major stages: first, non-infectious, immature virus material is produced which, subsequently, is converted into the fully active agent. Presumably the first step can be interrupted by the homologous inhibitor, while the second cannot.

Heterologous irradiated virus, injected after infection of the tissue, exerts only a slight inhibitory effect on the production of virus.

BIBLIOGRAPHY

1. Henle, W., *J. Exp. Med.*, 1949, 90, 1.
2. Henle, W., Henle, G., and Rosenberg, E. B., *J. Exp. Med.*, 1947, 86, 423.
3. Henle, W., and Rosenberg, E. B., *J. Exp. Med.*, 1949, 89, 279.
4. Henle, W., and Henle, G., *Am. J. Med. Sc.*, 1944, 207, 705, 717.
5. Delbrück, M., *J. Bact.*, 1945, 50, 151.
6. Henle, W., and Henle, G., *J. Exp. Med.*, 1949, 90, 23.
7. Gard, S., and von Magnus, P., *Ark. Kemi, Mineral. Geol.*, 1947, 24B, No. 8.
8. Latarjet, R., *J. Gen. Physiol.*, 1948, 31, 529.
9. Luria, S. E., and Latarjet, R., *J. Bact.*, 1947, 53, 149.
10. Cohen, S. S., Cold Spring Harbor Symposia on Quantitative Biology, Cold Spring Harbor, Long Island Biological Association, 1947, 12, 35.
11. Doermann, A. H., and Cohen, S. S., cited by Cohen S. S., *Bact. Rev.*, 1949, 13, 1.

STUDIES ON HOST-VIRUS INTERACTIONS IN THE CHICK EMBRYO-INFLUENZA VIRUS SYSTEM*

III. DEVELOPMENT OF INFECTIVITY, HEMAGGLUTINATION, AND COMPLEMENT FIXATION ACTIVITIES DURING THE FIRST INFECTIOUS CYCLE

BY WERNER HENLE, M.D., AND GERTRUDE HENLE, M.D.

(From The Children's Hospital of Philadelphia (Department of Pediatrics, School of Medicine, University of Pennsylvania), Philadelphia)

(Received for publication, January 4, 1949)

Certain of the experiments reported in the preceding paper suggested that propagation of influenza virus in or on the cells lining the allantoic sac of the chick embryo can be divided into two major phases. According to this suggestion, the first phase would correspond to the production of some incomplete non-infectious forms or building blocks of the virus which, in the second phase, are converted or combined into fully active virus (1). It seemed possible that the material produced in the earlier phase might be endowed with some attributes of influenza virus other than infectivity. Consequently, attempts were made to study the development of hemagglutinins and of complement-fixing antigens. In order to be able to measure these properties during the early period after infection, *i. e.* during the first cycle, it was necessary to employ infective doses in the order of 10^9 ID₅₀ of active virus.

It has been found in previous experiments that the selection of the seed is of prime importance (2). If the inocula were prepared under adverse conditions such as permitted the accumulation of inactive virus in the allantoic fluids, passage of these without dilution was found to result in partial interference with the propagation of the active virus by the non-infective material. On the other hand, if the allantoic fluids intended for seed were harvested when the infectivity just reached its peak, or shortly before that time, they could be used undiluted for passage to new chick embryos without the apparent intervention of interference. It is obvious that the present study required seed prepared under the latter conditions.

The experiments to be reported in this paper were conducted exclusively with the PR8 strain of influenza A virus. They show that production of both the virus (600S) and soluble (30S) complement fixation antigens (3) in the tissues can be demonstrated prior to the development of hemagglutinins which, in turn, precede the increase in infectivity. It will also be shown that the titer of hemagglutinins may increase in the allantoic fluid without a concomitant rise in infectivity and that under certain conditions suspensions of allantoic mem-

* The work described in this paper has been supported by a grant-in-aid from the United States Public Health Service.

brane may show marked titers of infectivity without showing a corresponding increase in development of hemagglutinins.

Methods and Materials

Seed was prepared by injecting 10-day-old chick embryos with 0.2 ml. of allantoic fluid containing the PR8 strain of influenza A diluted in broth to 10^{-7} . After incubation of the eggs for 48 hours at $36-37^{\circ}\text{C}$., they were chilled and the allantoic fluids harvested aseptically. The seed thus obtained was stored at 4°C . for not more than 5 days before use. These allantoic fluids contained between $10^{9.73}$ and $10^{10.30}$ ID₅₀ per ml. at the day of the experiment, and agglutinated chicken red cells in dilution 1:2048 to 1:8192.

The technics used for the growth experiments and the methods employed for the preparation of inactive, interfering virus have been described in detail in the preceding papers (1, 4). In some of the experiments of the present studies, immune serum was injected subsequent to infection of the eggs. The sera were prepared as follows, according to the technic described by Hudson, Sigel, and Markham (5). Infectious allantoic fluid was injected intramuscularly (1 ml.) and intraabdominally (3 ml.) into adult chickens. They were bled 10 to 14 days later and the sera tested for their ability to inhibit hemagglutination. Those sera which in dilution 1:64 neutralized 256 or more units of hemagglutinin of PR8 or Lee virus, respectively, were pooled and used for the tests. They were injected allantoically in 0.2 ml. amounts either undiluted or diluted, 1:10, in buffered saline solution.

The methods employed for the assay of infectivity have been published (1, 4). Hemagglutination was measured by the pattern test. To 0.4 ml. of each of the serial twofold dilutions of the allantoic fluids or membrane suspensions, 0.2 ml. of a 1 per cent suspension of washed, fresh chicken erythrocytes was added. After shaking, the tubes were incubated at 4°C . until the red cells had settled, and the degree of agglutination was read according to the pattern formed at the bottom of the tubes (6). The initial dilution of the test material giving the last definitely positive reading (\pm) was taken as the end-point. In many instances, the hemagglutination test was run in duplicate or repeated a second time. In these cases, the average values were computed for inclusion in the figures and tables. With certain of the preparations, the test tubes were shaken and read again after settling of the red cells.

The complement fixation technic employed has been fully described (3). When a concentrated preparation of the virus or 600S antigens was desired, the allantoic fluids or the suspensions of allantoic membranes were subjected to high speed centrifugation at 20,000 R.P.M. for 20 minutes, and the sediments were resuspended in a small volume of buffered saline solution to effect an 8- to 16-fold concentration of the antigen. The supernatant fluids were tested for the presence of 30S or soluble antigen. No attempts were made to concentrate this fraction. To differentiate further between the two antigenically distinct fractions, two types of sera were employed in all tests: a human influenza A convalescent serum containing high levels of antibodies against both the virus and soluble antigens, and a human postvaccination serum which reacted with the virus but not with the soluble antigen. The last initial dilution of the preparations giving complete fixation of complement in the presence of antibody was considered as the end-point. Influenza B convalescent sera were used for control purposes.

EXPERIMENTAL

Divergence in the Titers of Infectivity, Hemagglutination, and Complement-Fixing Activity

In the first experiment to be reported, 12-day-old chick embryos were infected with 0.2 ml. of undiluted infectious allantoic fluid containing $10^{9.6}$ ID₅₀ of PR8

virus. The allantoic fluids and membranes from groups of six eggs each were harvested at hourly intervals beginning 1 hour after infection, and tested for infectivity, hemagglutinating capacity, and complement-fixing activity in the presence of specific human sera. The results are recorded in Fig. 1. On the left side are shown the data of the allantoic fluid series, on the right those obtained with the membrane preparations. In the allantoic fluid series, the constant period of infectivity amounted to 6 hours. Thereafter, the virus titer began to rise slowly. The allantoic fluids of eggs incubated for 10 to 24 hours yielded infectivity levels in excess of $10^{9.3}$ ID₅₀ per ml., which indicated that the seed did not contain significant amounts of interfering agents (2).

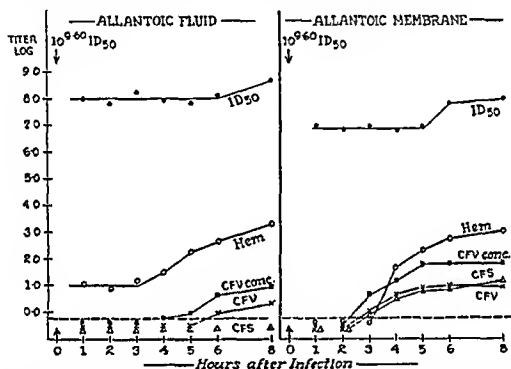


FIG. 1. The development of infectivity, hemagglutinating, and complement-fixing activities in allantoic fluids and membranes following infection with $10^{9.6}$ ID₅₀ of active virus.

ID₅₀ = 50 per cent infectivity doses per ml. Hem = hemagglutinin titer. CFV = complement-fixing titer of virus antigen; conc. = after eightfold concentration. CFS = complement-fixing titer of soluble antigen.

Hemagglutination tests with the same fluids showed that in agreement with earlier observations (7), some of the injected hemagglutinins remained unadsorbed, yielding a titer of about 1:12. The constant period before hemagglutination was observed to increase extended over 3 hours only, in contrast to the 6 hours before a rise in infectivity occurred. Following the 3 hour constant period, a slight but definite increase had occurred by the 4th hour, as determined by duplicate and repeat tests, and in the next 2 hours, the titer rose about 40-fold, whereas the infectivity remained unaltered. This unexpected result requires further study. At present, only this much may be said: The early increase of the hemagglutinins in the allantoic fluid requires both the living

host and fully active virus, since neither the injection into living chick embryos of similar amounts of virus inactivated by ultraviolet irradiation, nor the inoculation of comparable concentrations of active virus into eggs which had been killed just prior to the test by intravenous injection of small amounts of normal allantoic fluid, led to a change in the titer of the non-adsorbed hemagglutinins during a 24 hour period of incubation.

The complement fixation tests with the straight allantoic fluids as antigens became positive after 6 hours. However, upon concentration by high speed centrifugation, a rise in the antigen titer (600S or virus antigen) became ap-

TABLE I
The Formation of Soluble and Virus Complement-Fixing Antigens

	Material	Serum	Time after injection, hrs.						
			1	2	3	4	5	6	8
Allantoic fluid	Original	Postvaccination*	0	0	0	0	0	1:1	1:2
		Convalescent†	0	0	0	0	0	±	1:1
	Supernate	Postvaccination*	0	0	0	0	0	0	0
		Convalescent†	0	0	0	0	0	0	0
	Sediment conc. 16 X	Postvaccination*	±	1:1	1:1	1:2	1:2	1:8	1:32
		Convalescent†	0	0	0	1:1	1:1	1:4	1:8
Allantoic membrane	Original	Postvaccination*	0	0	±	1:2	1:4	1:4	1:8
		Convalescent†	0	0	1:1	1:4	1:8	1:8	1:16
	Supernate	Postvaccination*	0	0	0	0	0	0	0
		Convalescent†	0	0	1:1	1:4	1:8	1:8	1:16
	Sediment conc. 8 X	Postvaccination*	0	0	1:4	1:16	1:64	1:64	1:64
		Convalescent†	0	0	1:2	1:8	1:16	1:32	1:32

* Contains antibodies against the virus or 600S antigen only.

† Contains antibodies against the virus and soluble or 30S antigens.

parent at 4 hours concurrently with the development of hemagglutinins. The supernatant fluids were uniformly negative. Thus, no soluble or 30S antigen became demonstrable in the allantoic fluids during the period under test. Results of these titrations are included in Table I.

Tests with the suspensions of allantoic membranes are shown in the right-hand section of Fig. 1. The infectivity showed a constant period of 5 hours instead of the usual 4, as observed with more dilute inocula of virus (1). The titer rose sharply by the 6th hour, but only a slight additional increase was noted thereafter. The hemagglutination tests remained negative for 3 hours.

The 4 hour suspension gave irregular patterns of agglutination in the initial reading of the test. Upon shaking up of the test tubes and resettling of the cells, the titer increased somewhat and the usual patterns were observed. The titers continued to rise in the ensuing hours, although at a gradually decreasing rate.

The complement fixation test with the membrane preparations remained negative in the first 2 hours; in the 3rd hour it became positive, and increased in strength up to the 5th hour. No significant rise in titer was recorded thereafter. Both the virus and soluble antigens developed simultaneously, as shown in detail in Table I. Concentration of the virus antigen by high speed centrifugation increased the titer approximately eightfold, but did not lead to an earlier demonstration of antigen in contrast to the findings in the allantoic fluid.

This experiment showed the divergence between development of infectivity and hemagglutinating property, since the ratio between the infectivity and hemagglutinin titers changes during the experimental period. The number of ID_{50} corresponding to 1 hemagglutinating unit for the various preparations of both the allantoic fluids and the membranes in the first 3 hours after infection amounts to about 10^7 , but it subsequently decreases to about 10^5 ID_{50} by the 6th hour.

All test employing undiluted allantoic fluid, *i.e.* between $10^{9.0}$ and $10^{9.5}$ ID_{50} per dose, gave, in general, the same results as those recorded in Fig. 1. The periods elapsing before any changes in the various reactivities became measurable have been recorded in Table II. It is obvious that with the complexity of the experimental procedures and the techniques used, minor variations may be expected. However, in two instances, the discrepancies appeared more pronounced. The constant period of infectivity in the membranes of Experiment 2 extended only over 3 hours. No explanation can be given for this exceptional result. The other irregularity concerns the complement fixation tests in Experiment 4, with concentrated allantoic fluid antigens which remained negative for 5 hours instead of 3. However, as can be seen in the membrane preparations of the same series, the appearance of both positive hemagglutination and complement fixation reactions was likewise somewhat delayed.

Dilution of the seed virus in tenfold steps led to the results shown in Fig. 2. This figure represents the results of several experiments employing each of the individual dilutions. As far as the allantoic fluid series are concerned, the infectivity showed constant periods of 5 to 6 hours, varying in the individual tests within this range. The levels obtained during the constant periods were spaced apart in conformity with the dilution of the seed. Hemagglutinins increased measurably during the experimental period only in those groups of eggs injected with undiluted or tenfold diluted seed virus. In each instance, the increase was noted before the infectivity commenced to rise. Finally,

TABLE II

Constant Periods in Allantoic Fluid and Membrane as Measured by Infectivity, Hemagglutination, and Complement Fixation

ID ₅₀ injected	Allantoic fluid					Allantoic membrane				
	Infectivity	Hemagglutination		Complement fixation		Infectivity	Hemagglutination		Complement fixation	
		Original	Conc.	Original	Conc.		Original	Conc.	Original	Conc.
	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.
10 ^{9.60}	6	3-4	—	5	3	5	3	3	2	2
10 ^{9.23}	6	3	—	5	—	3	—	3	—	2
10 ^{9.15}	5	4	—	—	3	5	3	3	—	2
10 ^{9.09}	5	4	4	—	5	5	4	4	—	3
10 ^{9.10}	6	4	4	5	3	5	3	3	2	2
10 ^{9.23}	5-6	3	—	—	—	5	3	—	—	—
10 ^{9.03}	5	4	—	5	—	5	4	—	2	—

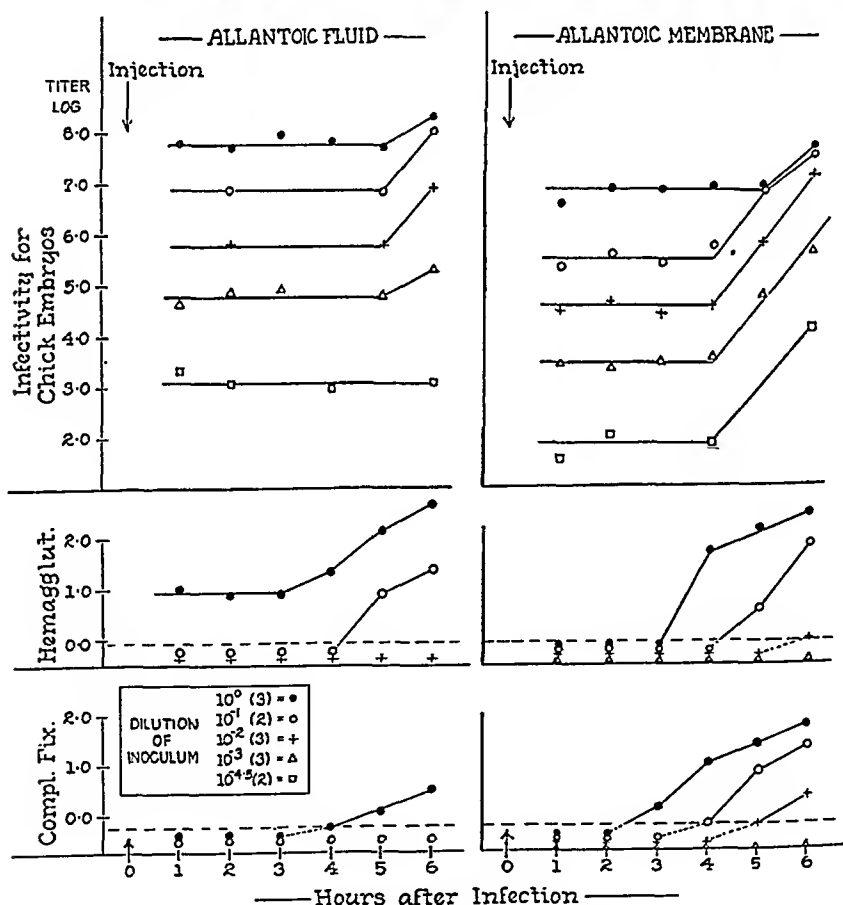


FIG. 2. The effect of dilution of the seed virus upon development of the various properties of influenza virus in allantoic fluids and membranes.

complement fixation antigen became demonstrable under these conditions only when undiluted seed was employed.

The results of infectivity titrations with the suspensions of allantoic membranes showed that after injection of undiluted seed, a constant period of 5 hours was observed. If one-tenth or less than that amount was injected, it extended regularly over 4 hours. After the constant period, the titer rose to similar heights in 6 hours in the case of the 10^0 and 10^{-1} inocula, and the results in the 10^{-2} series approached that level. However, when the seed was diluted further, the resulting curves ran roughly parallel. In the hemagglutination tests, positive results were obtained during the experimental period of 6 hours only when undiluted seed or 10- and 100-fold dilutions thereof were injected. The test became positive at the 4th, 5th, and 6th hours, in the order of the decreasing dilutions used for the inoculation. The titer obtained at the end of the experimental period with the 10^{-1} inoculum did not quite reach the level observed in the tests with undiluted seed, as was the case in the infectivity titrations. The development of positive complement fixation reactions with centrifugally concentrated materials (virus antigen), likewise, showed spacing at hourly intervals according to the dilution of seed virus used. However, the test regularly became positive 1 hour prior to the hemagglutination reaction. Again, the titers obtained in 5 to 6 hours following injection of 10^0 or 10^{-1} dilutions of the seed were not identical, but the difference noted was less than that which might have been expected, considering the dilution factor of the seed. With seed diluted more than 100-fold, only the infectivity remained measurable, whereas the other properties no longer reached detectable levels of activity during the experimental period.

These observations seem to indicate that the 10^{-1} inoculum, or about 10^3 ID₅₀, causes infection of all the susceptible cells, since ten times the dose of seed virus does not increase the yield of virus in the membranes. The data of the hemagglutination and complement fixation tests, on the other hand, are not quite in agreement with this conclusion. However, discrepancies between the infectivity and the other properties studied have been noted also in the allantoic fluid series, as outlined above, which indicate a certain independence of the various activities of each other.

The Effect of Homologous and Heterologous Irradiated Virus upon the Growth Curves

As has been pointed out in the preceding publication (1), a secondary injection of virus inactivated by ultraviolet irradiation following the infection of the eggs produced marked inhibition of propagation of virus in the tissues in case the homologous irradiated agent was used, and only a relatively slight effect in the case of the heterologous type. The inhibition by homologous irradiated virus was the more pronounced, the smaller the dose of active virus used for infection. On the other hand, when about 10^3 ID₅₀ of active virus was used for

infection, the secondary injection of homologous inhibitor failed to produce a distinct inhibitory effect; the constant period was only slightly prolonged, and the infectivity levels reached were of the order of those attained in the groups of eggs treated with the heterologous irradiated agent. The results of hemagglutination and complement fixation tests at this level of infecting dose, likewise, were closely similar, regardless of whether homologous or heterologous irradiated virus was injected following infection. They were slightly inferior to the levels obtained in the control groups not treated with irradiated virus.

The Effect of Immune Serum upon the Growth Curves

It is generally accepted that antibody cannot reach virus particles harbored by the host cells. In the type of experiments reported here, it was considered possible that immune serum injected into the allantoic cavity of the infected eggs would neutralize a large part of the non-adsorbed seed virus, and also part of any seed virus that might be superficially adsorbed onto the membranes and not be participating in propagation.

In preliminary experiments, it was established that antibodies against influenza virus are not adsorbed onto the membranes of normal chick embryos, nor are they resorbed into the blood stream to a measurable extent during experimental periods extending over 6 to 8 hours. When normal eggs were injected by the allantoic route with immune serum, and the membranes harvested by the usual technic several hours later, it could be shown that the resulting tissue suspensions were devoid of any neutralizing activity as far as infectivity was concerned, and inhibition of hemagglutination did not exceed that exerted by suspension of normal membranes.

Injection of anti-PR8 sera into eggs one-half hour following infection with about 10^9 ID₅₀ of PR8 virus failed to neutralize all the free, non-adsorbed virus in the allantoic fluid, even when 0.2 ml. of undiluted serum was employed. As seen in Fig. 3, which summarizes the composite results of four experiments of this kind, the infectivity decreased by more than 99 per cent, and only a slight rise was noted in the 6th hour of incubation. The hemagglutination and complement fixation reactions remained negative throughout the experimental period.

The tests with the allantoic membranes showed a decrease in infectivity to approximately 0.1 per cent of that of the controls in the first 3 hours. The titer then increased very sharply, and by the 5th hour, matched the levels noted in the groups not treated with serum. Thus, evidence has been obtained that a large part of the adsorbed seed virus can be neutralized without affecting significantly the ultimate yield of virus in the tissues. With regard to the hemagglutination tests, the serum prevented apparently the development of this activity from reaching detectable levels in the membranes during the entire period under study, in spite of the fact that the infectivity titers in both

groups attained similar heights at the end of the 6 hour incubation. High speed centrifugation of these materials and resuspension of the sediments in one-eighth of the original volume, likewise, failed to reveal hemagglutinins. No explanation can be given at present for this paradoxical finding. As to the complement fixation tests, only the 600S or virus-antigen was measured in these series after concentration by high speed centrifugation. It developed in gradually increasing amounts, but its appearance was somewhat delayed and the titers were reduced as compared with the controls. If one-tenth the amount of

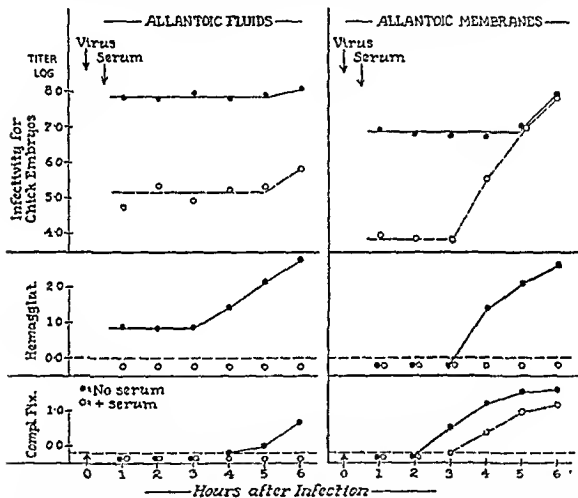


FIG. 3. The effect of injection of homologous antiserum subsequent to infection with about 10^3 ID₅₀ upon the development of the various properties of influenza virus in allantoic fluids and membranes.

homologous immune serum was injected following infection, the general appearance of the growth curves in the tissues was similar to that described for the tests with undiluted serum, except for the fact that under these conditions, small amounts of hemagglutinin became demonstrable at the end of the 6 hour incubation period. Using undiluted anti-Lee instead of anti-PR8 serum, the results resembled those of the control series except for slight reductions in the various activities in the allantoic fluids, caused most likely by non-specific

inhibitors present in the serum (8). The allantoic membrane titrations were not affected by this property of the serum.

Similar experiments were conducted with more dilute seed and undiluted homologous immune serum. The essential results are recorded in Fig. 4. In this figure, the infectivity titers obtained during the constant periods in the allantoic fluids and membranes with and without secondary administration of serum are plotted according to the dilution of seed virus used for the primary injection. It also includes a comparison of the results recorded with membranes at the end of the experimental period (6 to 8 hours after infection).

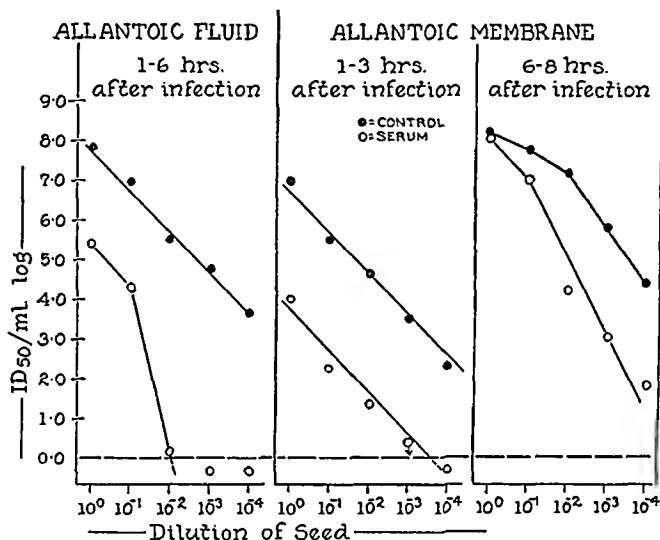


FIG. 4. The effect of homologous immune serum upon the amount of virus in chick embryos infected with decreasing amounts of virus as measured: (a) in the allantoic fluid, (b) the allantoic membrane during the constant periods, and (c) in the tissue at the end of the experimental period.

It can be seen that in the allantoic fluids, injection of serum resulted in a similar rate of reduction in infectivity when undiluted or tenfold diluted seed virus was injected. With further dilution of the inoculum, most or all of the virus activity was neutralized.

The reduction of infectivity in the membrane during the constant period, which never was less than 3 hours, proceeded at a similar rate, regardless of the dilution of the seed. This difference in the neutralization of free and adsorbed virus may be comparable to the difference between the rates of adsorption of virus onto the allantoic sac and onto red cells, which has been discussed in a preceding paper (4). The non-adsorbed virus and the antibodies are intermixed in the same menstium, allantoic fluid, and therefore, the chances of their

colliding are greater, whereas neutralization of the adsorbed virus can take place only at the fluid-tissue interface.

Inspection of the data obtained with membranes at the end of the experimental period shows that only in the case of undiluted seed, both control and serum groups reached similar levels of infectivity; *i.e.*, the virus grew out to the same extent in conjunction with the host cells in both series. With tenfold dilution of the seed, only a slight reduction was noted, but on further decrease in the dose (10^{-2} or less), the titers attained in the serum groups amounted to less than 1 per cent of those encountered in the controls. Essentially similar results were obtained if one-tenth of the amount of serum were used in these experiments. However, only with dilution of the seed to 10^{-4} or less, was all of the non-adsorbed virus neutralized in the allantoic fluid.

DISCUSSION

Studies on the propagation of influenza virus in the allantoic membrane, using large doses of seed virus, require particular precautions. It has been shown in the past that, under certain conditions, apparently enough inactive virus may accumulate in the allantoic fluids of the infected eggs to cause interference with the multiplication of the active virus on passage (2). For example, if eggs are seeded with large amounts of virus and permitted to incubate for extended periods of time, or if the harvested allantoic fluids are stored under adverse conditions, or frozen and thawed repeatedly, one finds that upon subculture in eggs dilute seed will produce a larger yield of virus than a more concentrated inoculum. The conditions can be reproduced by partially inactivating optimally grown seed by ultraviolet irradiation. On the other hand, if allantoic fluid is harvested at the time the infectivity has just reached its peak, *i. e.* 48 hours after inoculation of seed diluted to 10^{-5} to 10^{-7} , for instance, then passage of the undiluted allantoic fluid will result in infectivity titers equal to those obtained in subcultures of dilute seed.

Subsequent studies by von Magnus (9) have shown that factors other than inactivation of virus may play a role in the interfering activity of certain seeds. Serial passage of undiluted allantoic fluid at 18 to 24 hour intervals, starting with optimally produced seed, will lead after two to three transfers to inferior results, comparable to those described in the above paragraph. Although this type of experiment does not exclude the possibility of inactivation of some of the non-adsorbed seed virus during the incubation period, interpretation of the data is complicated by the demonstration in such allantoic fluids of particles smaller in size than the active virus, which apparently are endowed with hemagglutinating, and possibly interfering activities (10). It has been suggested that these particles constitute "precursors" of the virus.

In the preceding paper (1), indirect evidence has been presented which may be taken to indicate that the formation of virus occurs in at least two phases;

possibly during the first, apparently non-infectious, immature forms or building blocks of virus are produced which, in the second phase, are converted or combined into fully active virus. The data recorded in the present study seem to afford more direct evidence for this suggestion.

The growth curve experiments with suspensions of allantoic membranes, using 10^9 ID₅₀ of virus as inoculum, show that the various properties of influenza virus become detectable or reveal increments in the following order: The complement-fixing activity against both the virus or 600S and the soluble or 30S antigens reaches measurable levels in 3 hours, the hemagglutinating capacity in 4 hours, and infectivity begins to increase in 5 to 6 hours. Concentration of the active materials by high speed centrifugation fails to change the time relationships: there still remain 2 hours during which no record can be obtained concerning the activities of the virus in the tissues. It must be emphasized, however, that both the complement fixation and the hemmagglutination reactions require accumulation of relatively large quantities of the active materials before they become measurable. These experiments indicate then that the hypothetical "immature forms" or building blocks of the virus are already endowed with complement-fixing and hemagglutinating activities.¹

Similar differences between the infectivity, on the one hand, and the hemagglutinating and complement-fixing capacities, on the other, are noted in the curves obtained with the allantoic fluids. A distinct rise in hemagglutinins accompanied by complement-fixing activity occurs regularly 4 hours after infection; *i.e.*, 1 to 2 hours before any changes in infectivity become apparent. Although there is no proof that the data obtained with the membranes and fluids are based upon the same basic phenomenon, it seems likely that they are.

The non-infectious hemagglutinating and complement-fixing materials are considered, at present, as immature virus particles. However, the available evidence is insufficient, as yet, to regard this problem as closed. The experiments presented by Gard and von Magnus (10), and those recorded in the preceding paper (1) favor the explanation just outlined, but the possibility that this material derives from the injected seed virus has not been definitely refuted. It is improbable that the early increase in hemagglutinins in the allantoic fluids is caused by elution or breakdown of the seed virus, since in either case there should be concurrent changes in the infectivity. Furthermore, only injection of fully active virus produces these results, whereas injection of irradiated virus, in which the elution mechanism apparently is unaltered (11), does not lead to changes in the titer of residual non-adsorbed hemagglutinins (7). On the other hand, the fact that injection of immune serum after infection appears to prevent early formation of hemagglutinins in the membranes in spite of the development of infectivity titers comparable to those of the controls not treated with

¹ Recent experiments indicated that the interfering capacity of these fluids after dialysis and ultraviolet irradiation increased simultaneously with the hemagglutinins.

serum, may be taken as support for the second alternative. However, these latter data may be based on *other principles*, possibly of a serological nature which will be discussed further below.

Another point concerning the constant period of infectivity in the tissue requires discussion. It has been suggested that some of the seed virus is "superficially adsorbed" onto the tissue; *i.e.*, it probably is not participating in the propagative process (4). Indeed, much of the adsorbed seed virus remains accessible to the action of neutralizing antibody. Injection of specific immune sera following infection reduces the infectivity of the membranes by a factor of about 1000 and shortens the constant periods, but never to less than 3 hours. The "superficially adsorbed" virus sets a base line beyond which propagation of the "infecting virus" must proceed in order to become demonstrable as an increment in titer. The presented evidence suggests that with an inoculum of 10^9 ID₅₀ of active virus, the maximal number of host cells becomes infected, since with larger doses the ultimate yield of virus in the tissue at the end of the experimental period does not increase. Thus, the base line in the case of an inoculum of 10^9 ID₅₀ is approximately tenfold higher and, as a result, the constant period extends over 5 hours instead of 4.

The use of immune serum in these experiments has possible disadvantages. It is conceivable that multivalent antibodies attached to what is considered superficially adsorbed virus may retain free specific antibody groupings if the amount of seed virus is insufficient for their saturation. Upon emulsification of the tissues, these free groupings may then interact with some of the virus thus liberated which was previously inaccessible to the antibodies. Indeed, the increasing difference in the infectivity titers of the membranes in the control and serum groups at the end of the first cycle with the decrease in the amount of seed virus used for infection strongly suggests that such a carry-over of antibody activity may occur. The presented data offer then only a qualitative answer, namely, that some of the seed virus is superficially adsorbed onto the tissue, but they do not reflect what quantity of the seed virus found in membrane suspensions during the constant period falls into that category. Furthermore, it remains to be investigated whether the phenomenon of partial reactivation of neutral virus-antibody mixtures by dilution, as described by Taylor (12), may not affect the interpretation of some of the recorded data since the materials were highly diluted for the infectivity titration and by injection in the allantoic cavity. A difference between the reactivation of the infective and hemagglutinating properties could conceivably contribute toward an explanation of the paradoxical finding of a high increase in infectivity in the apparent absence of development of hemagglutinins in the tissue when immune serum is injected into the allantoic cavity after infection. From these various considerations it is obvious that the recorded experiments have established certain facts, but their explanation must await further experimentation.

SUMMARY

In agreement with earlier observations the infectivity titer in the allantoic fluids of chick embryos injected with influenza A virus remains constant for 5 to 6 hours before an increase in this activity can be noted. In contrast, the titers of hemagglutinin and complement-fixing antigen (virus antigen) have already begun to rise after 3 hours. The origin of the hemagglutinating and complement-fixing but non-infectious material is still obscure.

In the allantoic membrane development of both the soluble and virus antigens can be demonstrated after the 2nd hour of incubation and 1 hour prior to an increase in hemagglutinins and 2 hours prior to a rise in infectivity. Thus there remain the first 2 hours during which no record of virus activity in the tissues can be obtained.

Similar relationships are noted on dilution of the seed both in the allantoic fluids and membranes as long as the various properties reach measurable levels during the experimental period of one infectious cycle.

Injection of high titered immune serum following infection with about 10^9 ID₅₀ reduces the amount of demonstrable seed virus in the allantoic fluid and membrane without significantly affecting propagation of the agent in the tissues as measured by infectivity titrations. The production of hemagglutinins appears markedly reduced under these conditions whereas formation of complement-fixing antigen is only slightly delayed and decreased.

No definite explanations for the various discrepancies between the infectivity and hemagglutination can be given at present.

Note Added to Proof.—In a recent paper which was received only after submission of the three foregoing manuscripts for publication, Hoyle (13) reported several observations in agreement with some of those recorded in the present studies. He was unable to detect more than 1 per cent of the adsorbed seed virus in the tissues of the allantoic sac of chick embryos as measured by hemagglutination and infectivity tests (see Paper I of this series (4)), and demonstrated that the development of one of the complement-fixing antigens, the soluble antigen, preceded the formation of hemagglutinin in the allantoic membrane, a point discussed, among others, in the above paper.

BIBLIOGRAPHY

1. Henle, W., *J. Exp. Med.*, 1949, **90**, 13.
2. Henle, W., and Henle, G., *Am. J. Med. Sc.*, 1944, **207**, 705.
3. Wiener, M., Henle, W., and Henle, G., *J. Exp. Med.*, 1946, **83**, 259.
4. Henle, W., *J. Exp. Med.*, 1949, **90**, 1.
5. Hudson, N. P., Sigel, M. M., and Markham, F. S., *J. Exp. Med.*, 1943, **77**, 467.
6. Salk, J. E., *J. Immunol.*, 1944, **49**, 87.
7. Henle, W., Henle, G., and Kirber, M. W., *Am. J. Med. Sc.*, 1947, **214**, 529.

8. Hirst, G. K., *J. Exp. Med.*, 1942, 75, 49.
9. von Magnus, P., *Ark. Kemi, Mineral. Geol.*, 1947, 24B, No. 7.
10. Gard, S., and von Magnus, P., *Ark. Kemi, Mineral. Geol.*, 1947, 24B, No. 8.
11. Henle, W., and Henle, G., *J. Exp. Med.*, 1947, 85, 347.
12. Taylor, R. M., *J. Immunol.*, 1941, 40, 373.
13. Hoyle, L., *Brit. J. Exp. Path.*, 1948, 29, 390.

OBSERVATIONS ON THE RELEASE OF SERUM FIBRINOLYSIN BY SPECIFIC ANTIGEN, PEPTONE, AND CERTAIN POLYSACCHARIDES*

BY GEORGES UNGAR, M.D., AND SHIRLEY H. MIST, Ph.D.

(From the Rheumatic Fever Research Institute, Northwestern University Medical School, Chicago)

(Received for publication, March 11, 1949)

It has been known since 1893 that blood contains a proteolytic enzyme (1) and an inhibitor of this enzyme (2). Failure to detect any proteolytic activity in fresh serum was explained by the assumption that the enzyme was kept neutralized by an excess of the inhibitor. Such a protease-antiprotease system has attracted a great deal of attention because of the possibility that it is associated with certain immunological processes. Recent investigations have indicated that a proteolytic enzyme is present in serum as an inactive precursor which can be activated under certain circumstances. Such activation occurs when serum is treated with chloroform (3) or with a substance produced by certain strains of hemolytic streptococci (4). However, this does not explain the mechanism of fibrinolysis observed under various experimental (5) and clinical (6-8) conditions.

The present paper deals with a new set of conditions in which proteolytic enzymes can be activated in guinea pig serum. The observations reported below would seem to reopen the question of the part played by proteolysis in the mechanism of anaphylactic reactions and possibly other pathological conditions. These observations may bring into agreement early theories of anaphylaxis with recent findings by indicating an explanation for the mechanism of "anaphylatoxin" and "serotoxin" formation and by establishing this mechanism as an important link in the chain of reactions leading to the release of histamine and other toxic substances.

Methods

Several, often confusing nomenclatures are currently used in the study of blood proteases. The terminology proposed by Loomis, George, and Ryder (9) will be employed throughout this paper.

(a) *Preparation of the Enzyme.*—In previous experiments (10) direct estimation of fibrinolysin in sera treated with the specific antigen or peptone gave negative results. Under these conditions, there was good reason to believe that the enzyme, if released, would be neutralized by antifibrinolysin. However, it seemed that fibrinolysin could probably be detected if its combination with antifibrinolysin were prevented. After various unsuccessful attempts to

* This work was supported by a research grant from the United States Public Health Service at the Rheumatic Fever Research Institute, Northwestern University, Chicago.

eliminate the inhibitor by adsorption, it was found that separation of the enzyme from its inhibitor was obtained in the following manner. The activating agent, dissolved in physiological saline, was added to a measured amount of serum. After a measured duration of contact, the mixture was diluted with distilled water to twenty times the initial volume, adjusted to pH 5.2 with 0.5 per cent acetic acid by means of a glass electrode, and centrifuged. The supernatant, containing antifibrinolysin, was discarded and the precipitate was redissolved in saline buffered to pH 7.4 (phosphate buffer diluted to 0.1 M with 0.9 per cent NaCl). In the control sample, saline was added to serum and the mixture submitted to identical treatment.

Guinea pig serum was used throughout the experiments. Individual blood samples were taken by heart puncture; pooled blood was collected by bleeding guinea pigs from the carotid and jugular vessels. The serum collected from clotted blood was stored between experiments at -20°C .

(b) *Estimation of Fibrinolytic Activity.*—A technique based on the digestion of fibrinogen

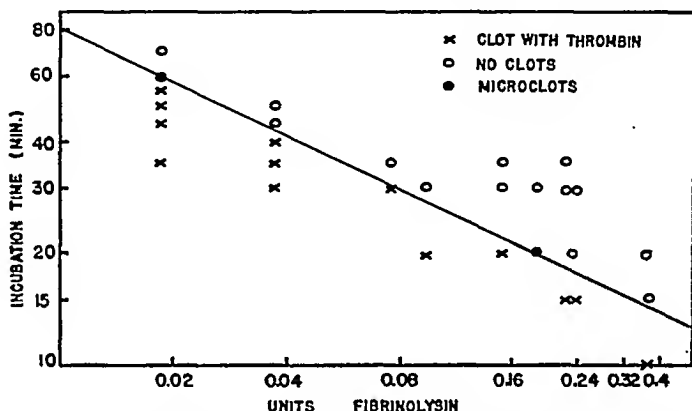


FIG. 1. Titration curve of fibrinolysin by the fibrinogenolytic method. Abscissa, units of fibrinolysin; ordinate, incubation time with fibrinogen (log scale). Temperature, 37.5°C , H 7.4.

was used in most experiments. Suggested first by Ferguson (11), the fibrinogenolytic method proved more sensitive than any other existing quantitative technique. It allowed the detection of amounts of enzyme equivalent to 10^{-6} mg. crystalline trypsin and was about 36 times more sensitive than the clot-lysis method as used by Loomis (9).

As described previously (10), the fibrinogenolytic method was standardized with crystalline trypsin. In the present work, the results are expressed in units obtained by comparison with the activity of a fibrinolysin preparation.¹ Fibrinogen submitted to the action of fibrinolysin loses its ability to clot on addition of thrombin. Duration of contact necessary to prevent clotting is inversely proportional to enzyme concentration when plotted on a logarithmic scale (Fig. 1).

Amounts of 0.2 ml. of a 0.2 per cent solution of fibrinogen² (in buffered saline at pH 7.4) are pipetted into a series of small tubes. Varying amounts of the enzyme solution to be tested are added to the fibrinogen and the total volume is made up to 0.4 ml. with saline. After incubation at 37.5°C . for 30 minutes one drop of a thrombin solution³ is added to each tube.

¹ Kindly supplied by Mr. E. C. Loomis of the Research Laboratories, Parke, Davis and Co.

² Fraction I, human plasma kindly supplied by Dr. J. T. Edsall.

³ Hemostatic globulin kindly supplied by Dr. A. D. Piersma, Lederle Laboratories.

The tube containing the lowest concentration of enzyme which fails to clot in 30 minutes contains by definition one unit of enzyme. In a previous publication (10) the unit was defined by the same duration of contact and at the same concentration of the reagents but the total volume was 5 ml. For purposes of comparison, all readings obtained in the present experiments have been divided by 12.5.

Some of the results of the fibrinogenolytic technique were confirmed by a viscosimetric method. This was considered more suitable than turbidity measurements used by Grob (12) and Ratnoff (13) because high turbidity of crude enzyme preparations interferes with the accurate reading of results. Two ml. of a 3 per cent solution of gelatin (in saline buffered to

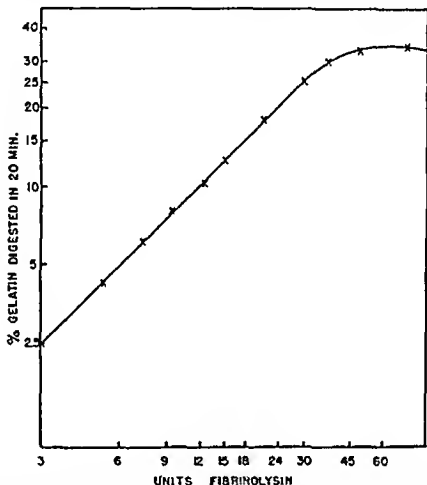


FIG. 2. Titration curve of fibrinolysin by the viscosimetric method. Abseissa, units of fibrinolysin; ordinate, decrease in viscosity of a 3 per cent solution of gelatin in 20 minutes' incubation with fibrinolysin (log scale). Temperature, 37.5°C., pH 7.4.

pH 7.4) is pipetted into an Ostwald viscosimeter kept at 37.5°C. The enzyme solution, filtered and warmed to the same temperature, is made up to the volume of 1.5 ml. and added to the substrate. Flow times are measured five or six times during the first 25 minutes and relative viscosities are plotted against time. The decrease in viscosity is linear for the first 20 minutes

and the initial viscosity can be read by extrapolation. Viscosity change is calculated (in percentage of the total amount) by means of the formula $X = 100 \frac{RV_0 - RV_{20}}{RV_0 - 1}$, where RV_0 = initial relative viscosity and RV_{20} = relative viscosity after 20 minutes' digestion. Fig. 2 shows that $\log X$ is linearly related to the logarithm of enzyme concentration for values of X between 2.5 and 25. The calibration curve was obtained with purified fibrinolysin. The results obtained by viscosimetry are also expressed in terms of the units defined above.

RESULTS

The hypothesis tested in the first series of experiments was that failure to detect fibrinolytic activity on addition of the specific antigen or peptone (10) to serum was due to the neutralization of the activated enzyme by antifibrinolysin. If this hypothesis proved true, neutralization should be prevented by precipitating the enzyme shortly after addition of the activating agent. Under these conditions enzyme activity could be detected in the euglobulin precipitate. The findings confirmed this hypothesis.

1. *Anaphylaxis*.—Eight guinea pigs received one subcutaneous injection each of 10 mg. egg albumin.⁴ Twenty-five days after sensitization 1.5 ml. of blood

TABLE I
Fibrinolysin in Sera of Guinea Pigs Sensitized to Egg Albumin

Serum from	Units/ml. serum	
	Control	With antigen*
Sensitized guinea pigs	<0.08	3.2
	0.4	1.6
	<0.4	0.8
	<0.08	1.2
	<0.4	3.2
	<0.8	2.4
	<0.08	1.6
	<0.08	1.2
Normal guinea pigs	<0.08	<0.08
	<0.2	0.2
	0.08	0.08
	0.2	0.4

Data obtained by fibrinogenolytic method.

* 0.1 mg. egg albumin per ml. serum.

was collected from each guinea pig by heart puncture. To each serum specimen 0.1 mg. per ml. egg albumin was added and after 3 minutes' contact, euglobulin was precipitated as described above. The precipitate was redissolved and fibrinolysin activity estimated by the fibrinogenolytic method. The results, summarized in Table I, show that the mean proteolytic activity of sera from sensitized guinea pigs treated with antigen was 1.9 units per ml. (± 0.3); whereas the same sera, untreated, gave the average value of less than 0.3 unit. When serum from normal, non-sensitized guinea pigs was mixed with egg albumin, there was no significant difference between albumin and saline-treated samples (0.19 and 0.14 respectively). These findings indicate

⁴ Soluble egg albumin Merck.

that the antigen-antibody reaction is accompanied by the conversion of inactive profibrinolysin into an active proteolytic enzyme.

2. *Peptone*.—The same results were observed when peptone⁵ was added *in vitro* to normal guinea pig serum. As seen in Table II, the optimum amount of peptone is 20 mg. per ml. of serum. It is also seen that activity varies according to the interval between addition of peptone to serum and precipitation of euglobulin. Activity increases between 25 seconds and 1 minute and then decreases between 2 and 15 minutes. This suggests that the profibrinolysin activation is comparatively rapid and also that simultaneously with the acti-

TABLE II
Fibrinolysin in Pooled Guinea Pig Sera Mixed with Peptone

Peptone mg./ml. serum	Time of contact	Units/ml. serum
Control	—	0.4
10	5 min.	1.6
20	5 "	5.6
50	5 "	2.4
100	5 "	1.6
Control	—	0.4
20	25 sec.	2.4
20	35 "	3.2
20	1 min.	8.0
20	2 "	8.0
20	5 "	5.6
20	10 "	3.2
20	15 "	1.6
Control (V)	—	0.3
20 (V)	2 min.	6.0
20 (V)	2 "	8.0

Fibrinogenolytic method, except when marked (V).

vation the enzyme combines with antifibrinolysin. After the first 1 or 2 minutes the rate of combination is faster than the activation which results in the gradual decrease of free enzyme.

The results shown in Table II were obtained in pooled guinea pig serum. Experiments were also performed on samples from individual guinea pigs and Table III shows the variation in profibrinolysin activation observed in eight guinea pigs. When peptone was applied under optimum conditions of 20 mg. per ml. serum for 2 minutes, the average value of fibrinolysin released is 4.95 units per ml. (± 0.94). The variation, as estimated by the coefficient of variation, is 48.8 in anaphylaxis and 53.2 in the case of peptone.

⁵ Proteose-peptone Difco

Deaths

George Edward Follansbee * for many years chairman of the Judicial Council of the American Medical Association, died in Cleveland, January 1.

Dr. Follansbee was born in Cleveland Oct. 16, 1871. He graduated at Western Reserve University School of Medicine in 1895. His career showed throughout his love for service to medical organization. His local interests included service as staff member at the St. Alexis Hospital and membership in the Academy of Medicine of Cleveland. For many years he had served the academy as a trustee and in other capacities, becoming president in 1918. In 1940 he was awarded honorary membership in recognition of his long service to the academy and to the medical profession. In 1944 the academy acknowledged his many years of service by awarding him its Distinguished Service Medal, the citation stating that he had done as much as any living physician to bring the academy to its position of importance and influence. A former fellow of the American College of Surgeons, Dr. Follansbee is also a specialist certified by the American Board of Surgery. He was president of the Ohio State Medical Association in 1925 and of the Cleveland Medical Library Association in 1931. Representing the Ohio State Medical Association, Dr. Follansbee was a member of the House of Delegates of the American Medical Association from 1919 to 1922 and from 1924 to 1930. He was appointed a member of the Judicial Council of the Association in 1925, again in 1930, in 1935 and again in 1940. In 1944 Dr. Follansbee resigned his chairmanship of the Council which he had held since 1928. He had served with the Committee on the Costs of Medical Care, first as a member representing private practice and later as a member of the executive committee.

In the death of Dr. Follansbee the American Medical Association loses a loyal friend and counselor, whose every act and decision were guided by his respect for the highest ideals and ethics of traditional medicine.

Estes Nichols * Portland, Maine; University of Vermont College of Medicine, Burlington, 1900; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; member of the American Clinical and Climatological Association, American Heart Association, American Public Health Association, American Trudeau Society, International Tuberculosis Association and the American Academy of Tuberculosis Physicians; served as a member of the board of directors of the National Tuberculosis Association; a director and vice president of the Maine Public Health Association; a director of the Cumberland County Public Health Association; served during the Spanish-American War and World War I; colonel, medical reserve corps, U. S. Army, not on active duty; formerly associated with the U. S. Public Health Service; a member of the honorary staff of the Maine General Hospital and consultant to the Maine Eye and Ear Infirmary, Children's Hospital and the U. S. Marine Hospital; for many years medical superintendent of the Maine State Sanatorium, Hebron; died December 12, aged 70.

Mortimer Warren * Portland, Maine; Johns Hopkins University School of Medicine, Baltimore, 1900; assistant clinical pathologist at the Cornell University Medical College, New York, from 1902 to 1910; specialist certified by the American Board of Pathology, Inc.; member of the American Society of Clinical Pathologists, New England Cancer Society and the New England Pathological Society; fellow of the American College of Physicians; chairman of the cancer com-

mittee of the Maine Medical Association; formerly associate with the U. S. Public Health Service; served in the medical corps of the U. S. Army during World War I; special commissioner for infantile paralysis control, Maine, from 1930 to 1932; pathologist at the Roosevelt Hospital, New York, from 1910 to 1916; pathologist at the Maine Eye and Ear Infirmary and since 1922 at the Maine General Hospital; received the honorary doctor of science degree from Bowdoin College in 1931; died at his home in Cape Elizabeth October 8, aged 70 of heart disease.

Elijah White Titus * Washington, D. C.; George Washington University School of Medicine, Washington, 1910; also a pharmacist; clinical professor of obstetrics and gynecology at his alma mater; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; fellow of the American College of Surgeons; member of the Washington Gynecological and Obstetrical Society, Hippocrates Galen Medical Society and the George Washington University Medical Society, of which he had been president; in 1941 honored by the General Alumni Association of George Washington University for faculty service of more than twenty-five years; on the medical board and the board of governors of the Columbia Hospital for Women and Lying-In Asylum; consultant in gynecology at Children's Hospital; on the staffs of George Washington University and Garfield hospitals; died December 11, aged 59.

Charles Edward Conrad * Harrisonburg, Va.; University of Virginia Department of Medicine, Charlottesville, 1905; specialist certified by the American Board of Pediatrics; served as president of the Rockingham County Medical Society, the Medical Association of the Valley of Virginia and the Virginia Pediatric Society; charter member of the American Academy of Pediatrics; formerly chairman of the pediatric section of the Southern Medical Association; past president of the Harrisonburg Rotary Club; received the Silver Beaver award for meritorious leadership in the Boy Scouts of America; life member of the Rockingham Library Association; on the staff of the Rockingham Memorial Hospital; died in the University of Virginia Hospital, Charlottesville, November 1, aged 65.

Norman Edward Ditman * Palm Beach, Fla.; Columbia University College of Physicians and Surgeons, New York, 1900; formerly instructor in pathology at his alma mater; served on the staffs of St. Luke's, Roosevelt and Sloane Maternity hospitals in New York; on the staffs of the

Good Samaritan and St. Mary's hospitals, West Palm Beach; veteran of the Spanish-American War; member of the National Defense Council and served as medical director of a Red Cross hospital during World War I; served for two years as head of the public health division of the New York Academy of Medicine and for many years as a director of the department of industrial hygiene of the American Museum of Safety; formerly visiting physician at Ritz-Carlton, Pierre and Gladstone hotels, New York; died December 15, aged 67, of coronary thrombosis.

John Kerr Pepper * Winston-Salem, N. C.; College of Physicians and Surgeons, Baltimore, 1907; fellow of the American College of Physicians; served as president of the Radiological Society of North Carolina; past president of the Forsyth County Medical Society; formerly a member of the state medical board for nurses; charter member of the Kiwanis Club and served as lieutenant governor of the third district of the Kiwanis International; member of the county board of health; on the staffs of the City Memorial and North Carolina Baptist hospitals; died October 31, aged 67, of heart disease and pneumonia.

Samuel Taylor Bassett, University City, Mo.; Barnes Medical College, St. Louis, 1905; Washington University School of Medicine, St. Louis, 1907; member of the American Medical Association; on the staff of the Missouri Baptist Hospital, St.



GEORGE E. FOLLANSBEE, M.D., 1871-1945

Louis, where he died November 1, aged 71, of pituitary dysfunction and lobar pneumonia.

Eugene Langdon Beard, Garber, Okla.; Ensworth Medical College, St. Joseph, Mo., 1908; city physician; died August 22, aged 58.

Nathan George Bennett, Haviland, Kan.; Barnes Medical College, St. Louis, 1902; member of the American Medical Association; died October 8, aged 71, of coronary thrombosis.

Robert Wilson Clark, Venango, Pa.; Western Reserve University Medical Department, Cleveland, 1884; member of the American Medical Association; died in the Meadville City Hospital, Meadville, August 28, aged 84, of senility.

Jake A. Hook, Pleasant Plains, Ark.; Memphis (Tenn.) Hospital Medical College, 1904; died October 14, aged 61, of lymphatic leukemia.

George T. King, Elgin, Texas; University of Louisville (Ky.) Medical Department, 1886; died October 14, aged 82, of cerebral hemorrhage and generalized arteriosclerosis.

William Thomas McBrayer, Atlanta, Ga.; Emory University School of Medicine, Atlanta, 1942; served an internship and residency in surgery at the Grady Memorial Hospital, where he died October 23, aged 25, of bronchiogenic carcinoma.

Royall J. Miller, Atlanta, Ga.; University of Georgia Medical Department, Augusta, 1881; died in the Georgia Baptist Hospital October 17, aged 83, of myocardial failure and uremia.

Weston Peter Miller, Eunice, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1909; member of the American Medical Association; died in the Touro Infirmary, New Orleans, October 28, aged 58.

John White Moore, Gloversville, N. Y.; Vanderbilt University School of Medicine, Nashville, 1904; formerly a medical inspector of the schools in Nashville, Tenn.; served on the staff of the Nathan Littauer Hospital; died October 6, aged 66.

Andrew Kincannon Naugle, West Point, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1905; served on the pension board of the Spanish-American Veterans; at one time Clay County health officer; a director of the Bank of West Point; served on the city school board for many years; died October 29, aged 66, of cerebral hemorrhage.

Alice Antoinette Pendleton, Cleveland; University of Oklahoma School of Medicine, Oklahoma City, 1937; served an internship at the Bethany Methodist Hospital, Kansas City, Kan.; died in the City Hospital October 14, aged 42.

Alva Sherman Pinto © Omaha; John A. Creighton Medical College, Omaha, 1898; health officer of Omaha; served on a Philippine cholera commission from 1900 to 1903; veteran of the Spanish-American War and World War I; on the staff of the Doctors' and St. Joseph's hospitals; died December 7, aged 72, of coronary occlusion.

Clara Stone, Los Angeles; Chicago College of Medicine and Surgery, 1912; died September 7, aged 60, of hypertensive heart disease.

Elmer John Tiedemann, Adrian, Minn.; Rush Medical College, Chicago, 1886; died October 28, aged 83, of acute myocardial failure.

John Kirtland Tressel, Alliance, Ohio; University of Wooster Medical Department, Cleveland, 1902; served during the Spanish-American War and World War I; died in the Veterans Administration Facility, Dayton, October 13, aged 66, of hypertensive heart disease.

John Pierce Turk, Nelson, Ga.; Atlanta College of Physicians and Surgeons, 1904; member of the American Medical Association; formerly mayor of Nelson; member of the board of education and Pickens County Selective Service Board; died October 26, aged 65, of coronary thrombosis.

Ralph Wallace Warnock © St. Paul; University of Minnesota Medical School, Minneapolis, 1921; specialist certified by the American Board of Internal Medicine; clinical instructor, division of internal medicine, at his alma mater; served an internship at the Minneapolis General Hospital; on the staffs of the Ancker, St. John's, Charles T. Miller and St. Luke's hospitals; died October 1, aged 53.

Hartwell Weaver, Dickson, Tenn.; Vanderbilt University School of Medicine, Nashville, 1910; member of the American Medical Association; died September 17, aged 58.

Eugene Griffith Wilcox, Drummond, Mont.; Northwestern University Medical School, Chicago, 1924; first lieutenant, medical reserve corps, U. S. Army, not on active duty; died in Missoula October 11, aged 50, of carcinoma of the hand.

DIED IN MILITARY SERVICE

Alfred Lee Clifton © Medical Director, Captain, U. S. Navy, Smyrna, Del.; University of Pennsylvania Department of Medicine, Philadelphia, 1906; commissioned a lieutenant (jg) in the medical corps of the U. S. Navy on July 15, 1908; later promoted to lieutenant, lieutenant commander, commander and captain; fellow of the American College of Surgeons; medical officer in command of the United States Naval Convalescent Hospital, Sun Valley, Ketchum, Idaho, where he died February 22, aged 62, of arteriosclerotic coronary heart disease.

Wilbur Leroy Edgerton © Baton Rouge, La.; Louisiana State University School of Medicine, New Orleans, 1939; served an internship at the Charity Hospital in New Orleans; commissioned a first lieutenant in the medical corps, Army of the United States, on July 30, 1942; later promoted to captain; a flight surgeon; died in the Asiatic area September 17, aged 30, of pneumonia.

Rudolph M. Hecht © Chicago; University of Illinois College of Medicine, Chicago, 1933; member of the American Academy of Dermatology and Syphilology and the American Association for the Study of Allergy; served an internship at the Michael Reese Hospital; commissioned a captain in the medical corps, Army of the United States, on Sept. 28, 1942; died in the European theater of operations September 16, aged 38, of injuries incurred in a vehicle accident.

Paul Hubbard Lowry, Syracuse, N. Y.; Syracuse University College of Medicine, 1922; member of the American Medical Association; fellow of the American College of Surgeons; instructor in clinical surgery at his alma mater; on the staff of the Hospital of the Good Shepherd, Syracuse University; surgeon, Syracuse University Infirmary; for many years physician of the Syracuse University athletic teams; commissioned a major in the medical corps of the Army of the United States on Aug. 12, 1941; began active duty on Sept. 1, 1942; died in Camp Joseph T. Robinson, Ark., November 5, aged 47.

Edward Patrick Manning, Milton, Mass.; Tufts College Medical School, Boston, 1937; served an internship at the Boston City Hospital; commissioned a lieutenant (jg) in the medical corps, U. S. Naval Reserve, on Feb. 7, 1941; later promoted to lieutenant and lieutenant commander; died in the U. S. Naval Hospital, Portsmouth, Va., August 21, aged 34, of subacute bacterial endocarditis.

Charles Walton Purcell, Danville, Va.; University of Virginia Department of Medicine, Charlottesville, 1933; member of the American Medical Association; served an internship at the Orange Memorial Hospital, Orange, N. J., and the New York Post-Graduate Medical School and Hospital, New York; served a residency in pediatrics at the University of Virginia Hospital, University, Va.; commissioned a first lieutenant in the medical corps, Army of the United States, on Aug. 20, 1942; later promoted to captain; died near Napa, Calif., November 11, aged 36, of injuries received in an automobile accident.

William Emmett Ryan © Midland, Texas; Baylor University College of Medicine, Dallas, 1925; fellow of the American College of Surgeons; past president of the Ector-Midland-Martin-Howard-Andrews-Glasscock Counties Medical Society; served as councilor and past president of the Second District of the State Medical Association of Texas; for many years served as city and county health officer; owned and operated the Ryan Hospital and Clinic from 1931 to 1942; charter member and past president of the Rotary Club; for many years director of the chamber of commerce, serving as president of that organization; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on June 1, 1925; promoted to captain; began active duty as a major, medical corps, Army of the United States, Sept. 25, 1942; later promoted to lieutenant colonel; died near Vendome, France, September 19, aged 45, of injuries incurred in a vehicle accident.

Joseph Duerson Stout © Washington, D. C.; George Washington University School of Medicine, Washington, 1913; Army Medical School, 1918; served during World War I; formerly professor of neurology at his alma mater; commissioned a major in the medical reserve corps, U. S. Army, March 14, 1925; began active duty as a lieutenant colonel in the Army of the United States March 5, 1941; died in England, November 6, aged 57, of cerebral hemorrhage.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1935 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Obstetrics and Gynecology, St. Louis 48:447-600 (Oct.) 1944

- Treatment of Carcinoma of Cervix During Pregnancy. H. W. Jones Jr. and W. Neill Jr.—p. 447.
- *Observations on Rh Factor in Its Relation to Hemolytic Anemia of New-born Infant. H. Lubinski, B. Benjamin and G. J. Strean.—p. 464.
- Psychodynamic and Therapeutic Aspects of Functional Dysmenorrhea. F. Wengraf.—p. 475.
- Fetal Electrocardiography and Stethography. S. S. Paley and S. Krell.—p. 489.
- Thrombocytopenic Purpura in Pregnancy: Review of Literature with Report of 3 Cases. W. F. Finn.—p. 497.
- Study of Commercially Manufactured Catamenial Tampons. Irja Elizabeth Widenius.—p. 510.
- Vaginitis Treated with Antiseptic Buffered Acid Jelly. J. C. Brougher.—p. 523.
- True Knots of Umbilical Cord. J. P. Hennessy.—p. 528.
- *Clinical Significance of Struma Ovarii. S. B. Gusberg and D. N. Danforth.—p. 537.
- *Vagitus Uterinus with Prolapse of Umbilical Cord. A. M. Mitchell.—p. 547.
- Antepartum Study of Fetal Polarity and Rotation. A. I. Weisman.—p. 550.
- Hypertthyroidism and Pregnancy. I. Kibel.—p. 553.

Rh Factor in Relation to Hemolytic Anemia of New-born Infant.—Lubinski and his collaborators consider it desirable to abandon the previous terminology, such as erythroblastosis fetalis, icterus gravis, congenital anemia and hydrops fetalis, which designate some of the clinical manifestations associated with the disease. Since hemolytic anemia is the most important feature, the term hemolytic anemia of the newborn seems appropriate for all forms of the disease. The authors studied 6 cases of hemolytic anemia of the newborn which occurred in six families. There was evidence that 7 other infants in these families had probably suffered from this disease. Common to all cases tested was the combination of the following conditions: The mother was Rh negative, the father was Rh positive (only one father was not available for testing), and the infant was Rh positive. All the mothers had anti Rh agglutinins in their serums. Immunization of an Rh negative woman by repeated transfusions of presumably Rh positive blood was later followed by fatal hemolytic anemia of her first newborn infant. Rh negative women should not be transfused with Rh positive blood, to prevent the possibility of this undesirable effect on future Rh positive offspring. A possible role of complement and of the liberation of hemolysins after the destruction of red blood cells in the clinical picture of hemolytic anemia of the newborn is discussed. No correlation was found between the titer of anti Rh agglutinins in the mother's serum at parturition and the severity of the disease in her newborn infant. As the treatment of choice for this disease, the infant should receive a transfusion of a concentrated suspension of washed Rh negative red blood cells as early as possible, and this should be repeated as often as may be necessary. A suspension of washed cells from the mother's blood may be used if no suitable donor is available. Washed cells from the mother's blood should be used in any case in which the mother and her newborn infant who shows evidence of the disease are both Rh positive or both Rh negative.

Struma Ovarii.—Gusberg and Danforth state that there have been 8 cases of struma ovarii recorded in the pathologic files of the Sloane Hospital for Women in the past twenty years. This represents 2.7 per cent of 297 ovarian teratomas of all types which were examined during the same period. Of the 8 cases, 7 presented the usual clinical symptoms which accompany benign ovarian tumors: intermittent abdominal pain,

painless pelvic or abdominal masses and in 1 instance acute abdominal pain due to torsion of the pedicle. In these cases the presence of thyroid tissue is only of pathologic interest. The cystic tumors were generally multilocular, and 3 of the 7 contained epidermoid elements characteristic of the ordinary dermoid cyst. Microscopically, none of these cases showed evidence of hyperplastic changes in the thyroid tissue. The eighth case presented a symptom complex of an unusual nature. A huge struma colli, a large struma ovarii and evident thyrotoxicosis were coexistent. The actual role of the ovarian tumor in the production of hyperthyroidism is problematic. The microscopic findings, the probable mechanical contribution of a huge goiter to the elevated basal metabolic rate and the persistent tachycardia after the thyroidectomy might be considered as presumptive evidence that the ovarian tumor contributed to the thyrotoxicosis. That struma ovarii is capable of producing, or at least contributing to, thyrotoxicosis is established. It is this ability which distinguishes the ovarian struma among all ovarian neoplasms. Cases of functioning ovarian struma may easily escape diagnosis, either through failure to appreciate mild hyperthyroid symptoms or through chance avoidance of thyroid tissue in the sectioning of large ovarian teratomas.

Vagitus Uterinus with Prolapse of Umbilical Cord.—Kitzmiller and Mitchell cited three conditions which must be present in order for crying in utero to become evident: 1. The membranes must have ruptured. 2. There is usually some operative manipulation to stimulate the infant. 3. There must be entrance of air into the uterus. Mitchell describes the delivery of a woman aged 29 in whom the membranes became visible twenty-five minutes after admission. A membrane-covered mass protruded from the vagina. The membranes ruptured spontaneously, and a loop of umbilical cord about 30 cm. in length was found prolapsed. Shortly thereafter the infant was heard crying loudly enough to be audible to all in the room. Fetal heart tones were 100 per minute but were still strong. An unsuccessful attempt was made to replace the loop of cord, and it was decided to deliver by version and breech extraction. Without unusual difficulty a female stillborn infant which weighed 6 pounds 2 ounces (2,900 Gm.) was delivered by combined podalic version and breech extraction.

American Review of Tuberculosis, New York

50:267-364 (Oct.) 1944

- Spirometric and Bronchospirometric Studies in Pneumothorax. G. C. Leiner.—p. 267.
- Bronchography in Pulmonary Tuberculosis: I. Normal or Questionable Roentgenographic Findings in Lungs and Positive Sputum. B. A. Dormer, J. Friedlander and F. J. Wiles.—p. 283.
- Id.: II. Radiographic Blackout—Evaluation of Underlying Lesions. B. A. Dormer, J. Friedlander and F. J. Wiles.—p. 287.
- Injuries of Thorax in Battle Casualties. L. K. Ferguson and R. B. Brown.—p. 293.
- Round Densities Within Cavities: Lung Lesions Simulating Pathognomonic Roentgen Sign of Echinococcus Cyst. I. D. Bobrowitz.—p. 305.
- Tuberculosis of Antrum: Report of Case. D. B. Radner and F. J. Pinkerton.—p. 313.
- *Fate of Very Young Children with Tuberculosis. Gertrude F. Mitchell and H. S. Willis.—p. 316.
- Tubercle Bacilli in Stomach Contents of Healthy Normal Adults Exposed to Tuberculosis. C. R. Smith.—p. 330.
- Specific Cytotoxic Action of Tuberculin: Quantitative Studies on Tissue Cultures. Dorothy H. Heilman, W. H. Felmand and F. C. Mann.—p. 344.
- Oxygen Lavage of Pleural Space: Note on Technique. J. F. B. Zweighaft.—p. 357.

Fate of Young Children with Tuberculosis.—Mitchell and Willis say that from 1922 until 1938, when the present study was ended, 2,091 patients up to age 14 were admitted to the Children's Division of the Maybury Sanatorium. Of these, 243 were 3 years of age or younger and were studied by Mitchell and Willis. Some of the patients of this group were brought to the hospital because of manifest illness, but the larger number were given diagnoses in the course of contact examinations and most of them were without symptoms. All of the 243 had tuberculosis. No one was admitted on the basis of a tuberculin reaction alone. Their diseases were classified on the basis of the x-ray appearance into primary and reinfection types. The outlook was distinctly worse for the reinfection than for the primary type of tuberculosis. With both the primary and reinfection types of tuberculosis the Negro child had a poorer chance

of survival than the white child. The younger children (birth through 18 months) had a much higher fatality than the older ones (19 to 36 months). The children discharged alive who had remained in the hospital longer than three months had a decidedly more favorable fatality experience than those who had remained a shorter period. (Fifty-eight per cent of all the children remained in the hospital longer than one year.) The children discharged with the disease apparently arrested had a more favorable subsequent fatality experience than those discharged with a less favorable clinical status. Nearly all of the children admitted with active primary lesions who were hospitalized until they could be discharged with apparently arrested tuberculosis were found, over a rather long period of follow-up, to have remained well. For this reason, a plea is made that children with active tuberculosis, with or without symptoms, be provided with adequate treatment in a hospital.

California and Western Medicine, San Francisco

61:179-228 (Oct.) 1944

- Permanent Emergency Medical Service for Disaster Relief H Gibbons —p 185.
Burns H. M. Blackfield —p 187.
Crush Syndrome C. A. Walker —p 190
Chemical Warfare Agents, Casualties Therefrom D. A. Rytand —p 191
Wounds: Their Care Under Civilian Defense J. H. Woolsey —p 193
Head and Blast Injuries E. J. Morrissey —p 196
Hospital In Emergency Medical Service A. J. J. Rourke —p 199.
Shock R. Ward —p 201.
California Physicians' Service: Report on Hearing Before U. S. Senate Subcommittee on Wartime Health and Education T. H. Kelly, —p 207.

Experimental Medicine and Surgery, Brooklyn

2:193-276 (Aug.) 1944

- Studies on Acoustic Phenomena Over Vessels of Neck in Healthy and Diseased Heart T. Groedel and M. Miller —p 193
Kidney Bleeding Produced by Alcohols and Some Anesthetics S. Levy Hockman —p 216
Brain Lesions Following Prolonged Overdosage with Desoxycorticosterone Acetate H. Selye, Eleanor Beland and Octavia Sylvester. —p 224
Effect of Salts on Activity of Tumor Triphosphatase Lea Frankenthal —p 229.
Extent of Digestion of Certain Dietary Proteins by Proteinases of Digestive Tract. P. I. Fodor, S. Kuk Meiri and A. Fodor —p 237
Adrenergic Activity in Rat Following Severe Traumatization of Extremities and Intestine W. Raab —p 252
Influence of Vagus Stimulation on Nodal Rhythm B. Kisch —p 259
Case of Digitalis Poisoning, with Morgagni-Adams-Stokes Syndrome B. Kisch —p 262

Journal of Nutrition, Philadelphia

28:219-304 (Oct.) 1944

- Choline and Pyridoxine Content of Meats J. M. McIntire, B. S. Schweigert and C. A. Elvehjem —p 219
Inadequacy of Lactose and Beta-Lactose as Dietary Carbohydrates for the Rat B. H. Ershoff and H. J. Denel Jr —p 225
Thiamine Content of Hen Eggs During Incubation N. S. Scrimshaw, W. P. Thomas, J. W. McKibben, C. R. Sullivan and K. C. Wells —p 235
Effect of Thiamine Depletion and Restoration of Muscular Efficiency and Endurance J. W. Archdeacon and J. R. Murlin —p 241
Effect of Institutional Cooking Methods on Vitamin Content of Foods I. Thiamine Content of Potatoes Anne W. Wertz and C. Edith Weir —p 255.
Requirement of Tryptophan by Chick C. R. Grau and H. J. Almquist —p 263.
Fractionation of Phosphorus Compounds in Certain Vegetables E. Ben nett —p 269
Effects of Variations in Dietary Protein on Physical Well Being of Men Doing Manual Work R. C. Darling, R. E. Johnson, G. C. Pitts, I. C. Consolazio and P. F. Robinson, with technical assistance of A. Kibler and M. Bartlett —p 273
Absence of Nerve Degeneration in Chronic Thiamine Deficiency in Pigs M. M. Witmrobe, R. H. Gollis Jr, S. Humphreys, H. Stein and Marjorie Lauritsen —p 283
Ineffectiveness of Vitamin E in Preventing Cholesterol Deposition in Aorta H. Dam —p 289
Toxicity of Fractions of Hog Liver Fatty Acids to Chick Fed a Vitamin E Deficient Diet. H. Dam —p 297

Institutional Cooking Methods and Thiamine Content of Potatoes.—Wertz and Weir analyzed foods obtained at a college dining hall which served three meals a day to 500 students. The potatoes for the noon and the evening meal were peeled with an electric abrasive peeler between 9 and 10 o'clock in the forenoon. The potatoes which were served for

the noon meal were washed and cooked immediately, whereas those used for the evening meal were placed in a vat and soaked for approximately six hours in tap water, which was slowly running into and out of the vat. On removal from the water the potatoes were placed in perforated metal trays in a steam oven and subjected to steam at a temperature of approximately 225 F. for one hour. If the potatoes were to be mashed, this was done immediately by whipping in an electric mixer with fat, salt, pepper and milk. The mashing process took about five minutes. During the interval between the completion of the cooking and the serving, the potatoes, either whole or mashed, were placed in trays in a steam warming oven at a temperature of 157 F. The time of holding ranged from fifty to one hundred and twenty minutes. The loss in thiamine incurred at each step has been computed on a dry weight basis. Small losses resulted from soaking the potato prior to cooking and from holding the potato in a steam oven for a period as long as one and a half hours. The greatest loss, 14.1 per cent of the original value for thiamine, occurred during the steam cooking process. The mashing of the potato did not appear to be destructive of the thiamine. The overall loss in thiamine exclusive of that during soaking approximated 20 per cent.

Effects of Variations in Dietary Protein on Men Doing Manual Work.—Darling and his associates made studies on 22 volunteers from a civilian public service camp, who continued on the work regimen of the camp. At the start each subject was given a thorough physical examination, clinical laboratory examination of blood and urine and blood chemical estimation. Assessment of physical fitness each week was by means of the so-called pack test, in which the subject, wearing a rucksack weighted to approximately $\frac{1}{2}$ his body weight, stepped up onto a 16 inch platform and back down onto the floor once each two seconds. The stepping exercise was terminated at five minutes; after stopping, the pulse was counted for three periods: one to one and one-half minutes, two to two and one-half minutes and four to four and one-half minutes of the recovery period. From these data a numerical score was calculated. The experiment was continued for eight weeks on the modified diet. Within two months no measurable influence either deleterious or beneficial could be observed on the physical vigor or efficiency of 8 healthy young men subsisting on a diet adequate in calories but restricted in protein. The daily protein intake averaged 50 to 55 Gm, little of which was of animal origin. Similarly no beneficial or harmful effect could be observed in two months on 8 men subsisting on a diet providing 160 Gm. or more of protein, mostly first class. These studies fail to confirm Chittenden's conclusions that a restricted protein diet improves physical well being. His conclusion that there is no impairment of health by such a diet is completely supported.

Medical Annals of District of Columbia, Washington

13:363-379 (Oct.) 1944

- Study of 200 Cases of Infertility H. Hertzberg —p 363
Interpretation of Dreams: Science or Fiction? F. S. Caprio —p 367.
Encephalic Form of Benign Lymphocytic Choriomeningitis: Report of Case T. F. Kehler —p 373
Congenital Hemiedema: Report of Case W. M. Yater and S. W. Nealon Jr —p 377.

New York State Journal of Medicine, New York

44:2175-2286 (Oct 15) 1944

- Experiences with Use of Desiccated Thyroid Methods of Detecting Self Induced Hyperthyroidism, with Report of Case in Which Auricular Fibrillation Occurred L. M. Hurvital —p 2217.
Complications of Cataract Extraction J. H. Dunnington —p 2224
Calcific Deposits in Shoulder H. L. McLaughlin —p 2231
Bicipital Tenosynovitis R. K. Lippmann —p 2235
Treatment of Poliomyelitis I. J. Sands —p 2242
Problems in Postoperative Care of Cancer Patients N. Treves —p 2248
Role of Hydrotherapy in Rehabilitation. H. J. Behrend —p 2255.

44:2331-2361 (Nov 1) 1944

- Evaluation of Continuous Caudal Analgesia C. B. Lull and R. A. Hingson —p 2331
Diagnosis of Disorders of the Small and Large Intestine E. D. Kiefer —p 2342
Role of Hospital in Medical Care M. F. Cahal —p 2350
Platybasia and Occipital Vertebra Causing Foramen Magnum Enlargement and Resulting Neurologic Symptoms L. A. Hadley —p 2355
Epithelial Cysts F. A. Dolce and R. L. Clark —p 2358.
Survey of 116 Cases of Pneumonia in Hospital Series and 22 Cases of Pneumonia in College Infirmary Series C. O. Davison —p 2360

Ohio State Medical Journal, Columbus

40:925-951 (Oct.) 1944

- Functional and Organic Diseases of Gastrointestinal Tract: Physiologic and Medical Considerations. A. C. Ivy.—p. 925.
Tropical Diseases: Their Geography, Biology and Prevalence. W. M. German.—p. 930.
Progress in Neurosurgical Treatment of War Wounds. W. J. Gardner.—p. 936.
Diverticulitis of Distal Colon. H. G. Reineke.—p. 939.
Vertigo: Practical Considerations. P. M. Moore.—p. 942.
Surgical Approach to Labyrinth in Ménière's Disease. H. M. Goodyear.—p. 944.
Method of Preservation of Sterile Needle for Several Hours. J. D. Walters.—p. 945.
Primary Pneumococcal Peritonitis. H. W. Smith.—p. 946.
Spontaneous Rupture of Spleen in Chronic Myeloid Leukemia. M. M. Greenfield and H. Lund.—p. 950.
Treatment of Acute Conjunctivitis with Tyrothricin. C. J. Streicher.—p. 951.
Historical Notes on Northwestern Ohio Medical Association. J. Forman.—p. 952.

Psychosomatic Medicine, Baltimore

6:283-352 (Oct.) 1944

- Criteria for Therapy in Psychosomatic Disorders. F. Dunbar and J. Arlow.—p. 283.
Some Psychologic Aspects of Sexual Promiscuity. E. D. Wittkower and J. Cowan.—p. 287.
Urinary Control and Enuresis. J. Louise Despert.—p. 294.
Genetic Factor in Autonomic Nervous System Function. H. Jost and L. W. Sontag.—p. 308.
Carbohydrate Tolerance of Mentally Disturbed Soldiers. H. Freeman, E. H. Rodnick, D. Shakow and Thelma Lebeaux.—p. 311.
Personality Organization and Anoxia Tolerance. M. Hertzman, J. Orlansky and C. P. Seitz.—p. 317.

Texas State Journal of Medicine, Fort Worth

40:269-312 (Sept.) 1944

- Welding Fumes in Steel Fabrication. P. Drinker and K. W. Nelson.—p. 273.
Newer Knowledge of Rheumatic Fever. Gladys J. Fashena.—p. 278.
Medical Management of Common Esophageal Disorders. C. O. Patterson, M. O. Rouse and J. S. Bagwell.—p. 284.
Free Skin Graft: Special Technique. E. J. Potl.—p. 290.
Newer Method in Treatment of Fractures of Os Calcis. B. L. Schoolfield.—p. 294.
Acute Mastoiditis Following Sulfonamide Therapy. L. M. Sellers.—p. 297.

40:313-354 (Oct.) 1944

- Continuous Caudal Anesthesia with Improved Gravity Drip Method. J. M. Siever.—p. 316.
Congenital Bladder Neck Obstruction. J. M. Pace.—p. 322.
Plateau Test in Breast Carcinoma. D. Jackson and A. O. Severance.—p. 328.
Artificial Fever Therapy. E. P. Cayo.—p. 330.
Vaginal Thrush. H. L. Gardner.—p. 333.
University of Texas Child Health Program: Its Basic Principles and Objectives. A. E. Hansen.—p. 338.

Plateau Test in Breast Carcinoma.—Jackson and Severance describe a "plateau" test, which is produced by the following manipulation: The flat of a hand is placed on each side of the tumor. Gently the hands are brought toward each other with sufficient pressure to produce a rounded surface between them and over the tumor. This surface is likened to the top of a hill. In a normal breast, or in the presence of a benign tumor, there remains a perfectly rounded top. In the presence of an early malignant growth there is a flattening of this top—a flattening containing fine irregularities; hence the name plateau. After working with this test for several years the authors have found that the zone just above the nipple does not lend itself to an accurate interpretation, and consequently they no longer use the test in this area. Chronic cystic mastitis contributed the greatest error in false positives, since this lesion gives a smooth flat plateau at times, whereas in cancer the plateau is irregular and often has fine lines and indentations on its surface.

Virginia Medical Monthly, Richmond

71:497-552 (Oct.) 1944

- Tumors of Bladder. W. M. Coppridge.—p. 500.
Asthmatic Atelectasis Simulating Pneumonia. D. B. Cole, W. L. Nalls and L. J. Buis.—p. 505.
Diagnostic Value and Technique of Aspiration Biopsy of Sternal Marrow. M. L. Dreyfuss.—p. 508.
Menstrual Irregularity. W. Bickers.—p. 513.
Nausea and Vomiting of Pregnancy Treated with L-Histidine Monohydrochloride: Preliminary Report. A. J. Russo.—p. 522.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Heart Journal, London

6:115-166 (July) 1944

- Myocardial Infarction. T. E. Lowe and W. B. Wartman.—p. 115.
Acute Left Auricular Failure. C. Bramwell and A. M. Jones.—p. 129.
Cardiac Involvement in Spirochetal Jaundice. W. E. Hume and P. Szekely.—p. 135.
Incomplete Bundle Branch Block. C. W. Curtis Bain.—p. 139.
Place of Foliandrin Within Group of Cardiac Glucosides. L. E. Schindler and K. Braun.—p. 149.
Temporal Arteritis. J. W. Brown and F. Hampson.—p. 154.
*Nicotinic Acid in Treatment of Angina Pectoris. W. Stokes.—p. 157.
Pulmonary Embolism: Clinical and Cardiographic Progress of Case. D. Lewes.—p. 161.

Nicotinic Acid in Treatment of Angina Pectoris.—Stokes studied the effect of nicotinic acid, nicotinamide, ascorbic acid, a gentian mixture and glyceryl trinitrate on 10 patients with effort angina. Eight of the 10 patients had had cardiac infarction at some previous date, but sufficient time had elapsed for maximum myocardial recovery to occur; 1 of the remaining 2 had hypertension, and the other with classic anginal attacks had a normal cardiogram. All were studied as ambulant outpatients. Clinical examination included cardioscopy and cardiography. Each test period lasted at least one week, and this was often repeated. There was no particular sequence, and a placebo in the form of ascorbic acid or a gentian mixture was interspersed at intervals. Nicotinic acid was employed in doses of 50 to 100 mg. prophylactically and for the direct relief of the painful attack in some of the cases. In all cases during further trial periods it was given in regular doses of 25 or 50 mg. up to 200 mg. daily. Similarly nicotinamide was given in amounts up to 400 mg. in a day. No greater benefit resulted from nicotinic acid or from nicotinamide than from a placebo. Changes in the electrocardiogram of cardiac ischemia in man following the administration of nicotinic acid suggest that the drug can improve coronary blood flow; but this results only from a dosage large enough to produce peripheral flushing, which in itself is an uncertain and unpleasant effect. Once again glyceryl trinitrate has shown that it has no equal in the treatment of angina pectoris, and nicotinic acid has no claim to routine use in this complaint.

Revista Médica Brasileira, Rio de Janeiro

17:35-113 (July) 1944. Partial Index

- *Tuberculous Bronchopathies. R. A. Piaggio Blanco and J. C. Dighiero.—p. 35.
Causal Factors of Curves of Tuberculinization. P. Purriel.—p. 45.

The Tuberculous Bronchopathies.—Piaggio Blanco and Dighiero classify tracheobronchial tuberculosis as the primary forms and those complicated by lymph node or pulmonary tuberculosis. The signs of primary tracheobronchial tuberculosis are those produced by local irritation followed by chronic fibrosis and chronic bronchial obstruction. The asthmatic and chronic bronchitic forms are most frequent. Tracheobronchial tuberculosis is frequent in primary pulmonary tuberculosis of children and adolescents and in secondary and tertiary pulmonary tuberculosis in adults. The diagnosis is established by bronchoscopy. The bronchoscopic aspects vary with the seat of the lesion and the evolutionary stage of the latter. The bronchial mucosa is frequently the seat of both tuberculous and nontuberculous lesions. The bronchi are either compressed by the enlarged lymph nodes or retracted by sclerosis of the pulmonary lesions. The evolution of tuberculous bronchial lesions runs parallel with the evolution of the tuberculous process in the involved lobe. Acute exudative bronchial tuberculosis appears in some cases two to six years after the regression of the pulmonary tuberculosis and its calcification. Bronchoscopy is the procedure of choice in the diagnosis of the lesion. It is harmless if contraindications are respected. The contraindications are laryngeal ulcers, spitting of blood and acute bilateral tuberculosis. The author performed 1,200 bronchoscopies without serious reactions. Biopsy of the bronchial mucosa is not to be performed.

Book Notices

The Diseases of the Endocrine Glands. By Hermann Zondek, M.D., Director of the Medical Division, Bikur Cholim Hospital, Jerusalem. Translated by Carl Prausnitz Gilles, M.D., M.R.C.S., L.R.C.P. Fourth (Second English) edition. Cloth. Price, \$11. Pp. 496, with 180 illustrations. Baltimore: William Wood & Company, 1944.

This edition of the widely known textbook on endocrinology has been brought down to date by inclusion of recent investigative material. Approximately the first quarter of the book is devoted to a general discussion of endocrinology in which the author attempts to correlate as much as possible of what has been published in the field of experimental and clinical endocrinology and of much that is known about relationships of this field with nutrition, neurology and certain other parts of physiology and pathology. The larger section of the volume is devoted to a series of chapters on a conventional clinical grouping of endocrine disorders, frequently illustrated with specific cases. The author introduces some chapters about less conventional topics, such as diencephalic disease, hyperostosis frontalis, the Schueller-Hand-Christian syndrome, osteomalacia, which is now being considered a nutritional disorder, and the status thymicolymphaticus. It is curious that there is no section on diabetes mellitus except a very short chapter on diabetes of a pituitary type. Nevertheless more space is given to a chapter on hyperinsulinism.

One of the characteristics of this author's work is his continuing tendency to rationalize all possible situations as he describes them. This is most frequently done by invoking the relationships between hormones and the nervous system or by comments on differences in the results of hormone stimulation depending on the nature of the end organ and its condition at the time.

The bibliography is arranged by chapters and by the names of the authors and occupies forty-six pages. This suggests that the volume affords an extensive guide to the now large literature of experimental and clinical endocrinology. It is perhaps not surprising in view of the author's chief experience in Germany that a large proportion of the bibliography is devoted to the German journal literature and that the references to work in the last decade in North America are relatively fewer than is the case in most American publications in this field. The book is very readable and will be welcomed by those who want an extensive presentation of the point of view of one of Europe's older clinical endocrinologists.

Textbook of Histology for Medical Students. By Evelyn E. Hewer, D.Sc. Third edition. Cloth. Price, 17s. 6d. Pp. 364, with 344 illustrations. London: William Heinemann, Ltd.; St. Louis: C. V. Mosby Company, 1944.

This textbook of histology is announced as being prepared especially for medical students. In this it does not differ from most of the other textbooks on the subject. As stated in the preface, the author has tried to emphasize this purpose by omission of "detail that is of academic interest rather than of practical importance." Apart from the question of whether the teaching of medical students on such a basis is desirable, there remains the problem of determining just what is "detail of academic interest" and what is of "practical importance." There is no evidence in the text that the author has been able to make a sharp distinction between these. The abbreviation of the text is mainly due to omission of discussion and description such as the reviewer feels is necessary to give the student a clear insight into our present knowledge and lack of knowledge of the structure and function of the various cells, tissues and organs. The author states in the preface that references are given for further information. However, the references are few and do not concern original papers or reviews that might stimulate the student but general textbooks.

The text contains a few confusing statements. On page 11 the cells of transitional epithelium are described as "protoplasmic and soft." On page 88 it is said that a nerve cell has "no true cell wall (!) but merely a covering membrane," while in the same chapter on page 92 we find "a nerve cell has no true cell membrane, the external surface being naked."

The illustrations consist of photomicrographs and diagrammatic drawings. The first are good but inadequately labeled;

the majority of the latter are unacceptable. The book contains a series of photographs of brain stem sections. For a description of them the student is referred to textbooks of anatomy or neurology.

An interesting feature of this book is that each chapter is followed by a description of the reaction of tissues to various physiologic and pathologic conditions. However, the possible goal of this, to aid the student in the transition to pathology, is not reached because of the epigrammatic character of the descriptions.

Latrodectus mactans y latrodectismo: Estudio experimental y clínico. Por Rafael B. L. Sampayo. Tesis de doctorado en medicina, Universidad Nacional de Buenos Aires, Facultad de ciencias médicas, Instituto de fisiología. Paper. Pp. 227, with 48 illustrations. Buenos Aires, 1942.

In all probability this is the most comprehensive monograph ever published on spiders of the black widow group. The study was suggested to the author by Dr. B. A. Houssay, in whose laboratory most of its experimental part was carried out. The study is systematic. It starts with the history of latrodectism, zoologic place of *Latrodectus* and its biology (ecologic data, longevity, habitat, reproduction and so on), which is followed by a chapter by Dr. J. Porto on the structure of the poisonous glands of the insects. Then there is an analysis of what is known on the chemical components of the venom, effects on other animals and pharmacology of the active principles. From the experiments of the author, sometimes duplicating results already known, it results that the poison exerts its effects on the central nervous system with subsequent rise of the blood pressure and changes in the T wave of the electrocardiogram and respiratory disturbances. The effects on the blood, bronchi, intestine and uterus are also carefully studied. Some of these effects are neutralized by specific antisera. Other chapters deal with the treatment of intoxication in human beings, manufacturing and purification of specific antisera, clinical study of latrodectism and social importance of the condition. The references given are 923, among which there is an imposing amount of those from Latin American workers. The illustrations are excellent.

Diseases of the Digestive System. Edited by Sidney A. Portis, D.S., M.D., F.A.C.P., Associate Professor of Medicine, University of Illinois Medical School, Chicago. Second edition. Cloth. Price, \$11. Pp. 932, with 182 illustrations. Philadelphia: Lea & Febiger, 1944.

This newly revised and rearranged compendium is written by forty-eight different authors in the field of digestive diseases. The entire gastrointestinal tract, the liver, the gallbladder and the pancreas are discussed. There are separate chapters by recognized authors on the anatomy and physiology of the major organs. Chapters are devoted to gastrointestinal manifestations of cardiovascular, renal, urologic, neurogenic, psychosomatic, endocrinologic and allergic diseases. Excellent chapters on intestinal protozoal and metazoal infestations are included. In this new edition the psychosomatic aspects of digestive disease have been especially stressed. The writing of each chapter has been left to its particular author. This gives variety and freshness of approach but leads also to inequalities of treatment, varying from the extraordinarily concise chapter on linitis plastica, by Aaron, to the more diffuse chapter, by Gaither, on gallbladder disease. The majority of chapters are quite complete but concise. The result is a small book, easily carried, printed in large type on good paper and well illustrated. It can be recommended to students and practitioners alike as a practical book of easy reference, well up to date in regard to new discoveries, diagnosis and treatment.

Special Delivery: The Expectant Mother's Handbook. By B. D. Rosenberg, M.D. Cloth. Price, \$2. Pp. 96, with 43 illustrations by Gladys McHugh. Chicago & New York: Ziff-Davis Publishing Company, 1944.

Under the catchy title this small book is an attempt on the part of a physician to present the story of childbirth to a lay audience in such a way as to remove the fears and fancies surrounding this physiologic function. He accomplishes his purpose by means of numerous beautifully executed illustrations by a well known medical artist and descriptive material to elucidate the pictures. Although the book may hold some interest for potential mothers, it doesn't replace the antepartum information provided by many well known textbooks.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

MUSCULAR CRAMPS IN NORMAL PERSONS

To the Editor:—Please tell me the cause of muscle cramps in athletes aside from so-called heat cramps. Does the calcium balance have any part in this condition? Is there any preventive?

M.D., Illinois.

ANSWER.—There is surprisingly little known about the cramps which develop in normal persons during exercise, at night when turning or stretching, after yawning or when some unusual position is held excessively long. In these circumstances an intense involuntary contraction is superimposed on the voluntary activity in much the same manner as occurs in the pathologic state described as myokymia. Apparently the contraction is accompanied by spike action potentials and therefore is more closely related to normal voluntary contractions than to the so-called contractures in which spike potentials are not seen. The cause of the cramp lies in an abnormal sensitivity of the muscle fiber at or near the motor end-plate which permits the appearance of series of autogenic discharges which force the muscle into an intense tetanic contraction. This process is evidently intensified by fatigue, insufficient blood supply, mild myositis or neuritis, vitamin B deficiency, alkalosis, low serum calcium and a variety of congenital diseases of the muscles, and the cramps seen in these conditions have clear affinities with those observed in normal persons. Collip and Backus have suggested that cramps in swimmers and runners might be due to tissue alkalosis due to hyperventilation and loss of carbon dioxide in excess of production. If this should be the case, calcium administration might on theoretical grounds be useful, although the difficulty of maintaining an increased serum calcium in such circumstances would be great. In addition Denny-Brown and Pennypacker have reported that calcium was ineffective in controlling cramps occurring in patients with myokymia.

The observation that drugs, such as neostigmine, which potentiate acetylcholine activity increase the incidence of myogenic muscle contractions related to cramps induced Moss and Herrmann to employ quinine, which has a curare-like action, antagonistic to acetylcholine, to prevent night cramps, and they report a number of cases successfully treated in this manner. This drug might therefore prove useful in reducing the incidence of cramps in athletes, without harm to voluntary muscular performance.

References:

- Collip, J. B., and Backus, P. L.: The Effect of Prolonged Hyperpnea on the Carbon Dioxide Combining Power of the Plasma, the Carbon Dioxide Tension of Alveolar Air and the Excretion of Acid and Basic Phosphate and Ammonia by the Kidney, *Ann. J. Physiol.* 51:568 (April) 1920.
Denny-Brown, D. E., and Pennypacker, J. B.: Fibrillation and Fasciculation in Voluntary Muscle, *Brain* 61:311 (Sept.) 1938.
Moss, H. K., and Herrmann, L. G.: The Use of Quinine for Relief of "Night Cramps" in the Extremities, *THE JOURNAL*, Oct. 19, 1940, p. 1358.
Wilder, J.: Crampus Disease and Localized Muscular Cramps, *M. Rec.* 152:442 (Dec. 18) 1940.

NASAL SIPHONS

To the Editor:—I would appreciate information concerning the Nichols nasal siphon. Is this an acceptable apparatus for cleansing and irrigating sinuses? Will it evacuate the sinuses of pus and thick discharges? Is it sound practice to use it for acute and chronic sinusitis?

A. L. Henriksen, M.D., Van Nuys, Calif.

ANSWER.—Siphons of this type are in use and are prescribed by physicians under proper precautions. They are suitable for selected conditions and patients. The siphon will certainly cleanse the nasal passages, and the one mentioned, because of its suction aspects, may conceivably remove secretion from the sinuses.

There is a risk, however, in the use of any siphon: if the procedure is improperly carried out, infected nasal secretions and irrigating fluid may be forced up into the eustachian tubes with a resultant acute otitis media.

Patients using nasal irrigations must be warned of its dangers and instructed as to its proper use. They should be of an age and intelligence sufficient to assure their following instructions carefully.

It might be best to reserve the use of siphonage for chronic and subacute instances of sinusitis and avoid its use in the more acute types.

EXPOSURE OF MAPHARSEN SOLUTIONS TO AIR

To the Editor:—In some clinics for the treatment of syphilis the method of preparing the mapharsen is as follows: An ampule of 0.40 Gm. or 0.60 Gm. (ten dose) size of mapharsen is dissolved in 100 cc. of distilled water with careful sterile technic. The solution, with dissolved mapharsen, remains in the rubber stoppered bottle. The dose required for each patient is removed from the bottle as needed. This subject is of clinical importance, and in clinics with a large case load it is time saving to prepare the mapharsen solution before the clinic begins, if the efficiency of the treatment is not reduced by such a method. Has any clinical or experimental information been collected to determine that the therapeutic efficiency of mapharsen solution is lessened when prepared two to four hours previously? The statement appears in Moore's *Modern Treatment of Syphilis* (ed. 2, Springfield, Ill.; Charles C. Thomas, 1943, p. 68) that mapharsen "oxidizes slowly and upon oxidation becomes less toxic as well as less efficient therapeutically." However, in the Parke-Davis instruction folder the statement appears "Mapharsen solution may be allowed to stand for several hours exposed to air with no increase in toxicity or loss in efficacy." References to the literature and any other information on this subject will be appreciated.

Laurence J. Underwood, M.D., Huntington Park, Cal.

ANSWER.—The only reference in the literature on the point raised by the enquirer is in the article by Tatum and Cooper "Experimental Study of Mapharsen as an Antisyphilitic Agent (*J. Pharmacol. & Exper. Therap.* 50:198 [Feb.] 1934). Here it is clearly stated that when mapharsen solution is allowed to stand exposed to the air for several days both toxicity and therapeutic efficiency are somewhat decreased. There is no information that there is a significant decrease in therapeutic efficiency when such a solution is allowed to stand for only a few hours. The clinic procedure referred to in the query is customary in many clinics for the treatment of syphilis.

It is understood that Dr. A. L. Tatum of the University of Wisconsin has done further experimental work on the subject and has accumulated a good deal of unpublished evidence on the effect of aeration on mapharsen solutions.

OSTEOPATHIC REPORT

To the Editor:—Recently a patient presented me with a report which he had received from an osteopathic hospital. The report read as follows: "In the standing position, the articular surface of the left femur, the left iliac crest and the contact of the perpendicular to the long axis of the sacrum with the left femoral plane were respectively 0.6, 0.7 and 1.8 cm. nearer the floor than the corresponding points on the right. The mid-point of the 1st sacral segment and the symphysis were respectively 0.4 and 0.6 cm. to the right of the midline. Lateroflexion change to the left of the 4th and 5th lumbar segments was observed with compensatory lateroflexion change to the right of the upper lumbar segments." The patient wanted to know what was wrong. Can you give me help in making a diagnosis from this report?

Albert Tormey, M.D., Madison, Wis.

ANSWER.—This report from an osteopathic hospital is quite meaningless to an orthopedist. It is utterly impossible to base an opinion on any recognizable diagnosis on this report.

IRRITATION OF EYES FROM PENTACHLOROPHENOL

To the Editor:—I have been asked by one of the local industries whether nitrocellulose and pentachlorophenol are injurious to the eyes, or the thinner also used: ethyl acetate and butyl alcohol. Would the fumes of these be irritating?

W. Edward McGarvey, M.D., Jackson, Mich.

ANSWER.—With the exception of nitrocellulose, all of the substances mentioned may be irritating to the eyes if applied directly. Nitrocellulose is a solid, probably has no melting point and does not give off vapors. If ignited, nitrocellulose decomposes with the formation of the dangerous oxides of nitrogen, fully capable of eye injury but more likely to involve the respiratory tract. Pentachlorophenol is a dangerous chemical, but because of its high boiling point (310 C.) it is little likely to emit harmful vapors when cold. When heated, this substance gives rise to highly pungent odors and irritation. Likewise its dust is irritating. Ethyl acetate and butyl alcohol fall into less harmful categories. At about the level of 150 parts per million of air, ethyl acetate may bring about ocular inflammation, although only a slightly lower level is regarded as safe for extended exposures. Butyl alcohol usually is rated as being about three times as toxic as ethyl alcohol, but it is recognized that minor eye irritation from its vapors exceeds this proportion. Pentachlorophenol is the substance in this group most likely to cause irritation of the eyes.

PREGNANCY IN RAYNAUD'S DISEASE

To the Editor:—A patient who has Raynaud's disease is contemplating pregnancy. Is pregnancy advisable under such circumstances?

Ben N. Miller, M.D., Columbia, S. C.

ANSWER.—Pregnancy does not have an adverse effect on Raynaud's disease.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 127, No. 2

CHICAGO, ILLINOIS
COPYRIGHT, 1945, BY AMERICAN MEDICAL ASSOCIATION

JANUARY 13, 1945

THE EFFECTS OF BIOCHEMICAL THERAPEUSIS IN CARCINOMA OF THE PROSTATE

FURTHER OBSERVATIONS

WILLIAM P. HERBST, M.D.
WASHINGTON, D. C.

In June 1940 Drs. Huggins and Clark presented an exhibit at the meeting of the American Medical Association in New York which demonstrated the fact that the administration of diethylstilbestrol to dogs with benign hyperplasia of the prostate resulted in atrophy of the epithelial cells and a decrease in the total bulk of the prostate gland. In the following August a patient with an extensive inoperable malignant prostate gland presented himself for treatment. His general condition was such that no surgical or instrumental procedure was justifiable. With the idea in mind that, if diethylstilbestrol produced some change in the biochemical soil in the dog which resulted in atrophy of the prostatic epithelial cells, estradiol dipropionate or similar biologic substances might modify the soil of a human being with prostatic carcinoma in such a way that carcinoma cells might atrophy, this patient was given 1 mg. of estradiol dipropionate by injection into the deltoid. The immediate change observed in this person was most spectacular. Instead of having to void with severe pain in a dribble at hourly intervals, he had to void only at periods of from every four to six hours, and instead of a dribble the urine came in a definite stream. This occurred in twenty-four hours. Following this experience a number of patients with benign and malignant prostatic obstructions were treated, and the results were reported before the Mid-Atlantic Section of the American Urological Association in March 1941 at Washington, D. C. Since that time the contribution of Huggins and others on certain chemical aspects of the control of prostatic carcinoma by castration have stimulated a hopeful interest in the chemical control of cancer.

It seems that at the present time the human race is going through an evolutionary period of an increasing incidence of cancer partly because of a myriad of already known carcinogenic substances with which we come in contact in our daily environment. The abstracted case reports which follow are presented to demonstrate the extreme variation in the clinical course in this form of treatment and to provide material for discussion:

REPORT OF CASES

CASE 1.—A man aged 69 in poor condition had a large inoperable mass in the rectum, extreme dysuria and a frequency of hourly voiding. One mg. of estradiol dipropionate by hypo-

dermic injection changed voiding to nocturia only four times and he voided with comfort in a stream instead of a dribble. From Aug. 14, 1940 to the present time this patient has been under control most of the time and is now definitely under control. The dose of estradiol dipropionate varied from a series of nine injections at the rate of three a week with varying periods of administration to the present dose of 0.5 mg. of ethinyl estradiol orally per day and 5 mg. of diethylstilbestrol every two weeks by hypodermic in the office. In addition to these chemicals he is getting two vitamin B complex capsules, 10 mg. of thiamine hydrochloride and three calcium gluconate tablets 15 grains (1 Gm.) orally daily. Calcium gluconate 15 grains is given intravenously in the office every two weeks when the patient gets the 5 mg. of diethylstilbestrol by hypodermic injection. At one time he developed a purpuric-like skin picture phenomenon with no abnormal blood findings, but this has been controlled to date by calcium. A resection was done on June 2, 1942, because of dysuria and obstruction. He had successive thrombophlebitic attacks involving three extremities and the lungs, in order, which resulted in a critical illness of three months' duration and which was controlled by calcium therapy. His phosphatase estimates have followed the clinical course. When bone pain in the region of the neck, shoulder, back and thighs has occurred the dose of estradiol dipropionate, diethylstilbestrol or ethinyl have been increased until control has been accomplished. Today he is comfortable and able to do a few chores on a farm in spite of the metastases which involve his spine and pelvis.

CASE 2.—A man aged 69 with circulatory failure, acute diabetes and obstructive pyuria with nonprotein nitrogen 51 and blood sugar 300, who had been treated by suprapubic cystostomy on Jan. 25, 1940 followed by resection on March 27, had been all right until November 25 (eight months later), when he complained of dysuria but was emptying the bladder. Between Nov. 23 and Dec. 13, 1940 he had nine 1 mg. injections of diethylstilbestrol, which completely relieved his symptoms. On Jan. 23, 1941 he returned complaining of right lumbar pain but voiding comfortably. From that time until now he has had a most interesting course. Castration and removal of his right breast were done on Aug. 11, 1941. The castration was not done because of any difficulty but because of the necessity of getting the injections. The breast was removed to get a microscopic study by Col. J. E. Ash, which was done and reported previously. A typical female breast structure was found. He progressed beautifully after castration in every respect, including relief of the necessity of giving insulin for his diabetes. No more insulin has been necessary to date. Dec. 30, 1942, a little over sixteen months later, he complained of a little backache. From Dec. 30, 1942 until May 17, 1943 his backache was controlled by B complex orally and hypodermic injections of 2 cc. of a multivitamin B preparation from time to time. On May 17, 1943 1 mg. of diethylstilbestrol and 1 cc. of the multivitamin B preparation were given by hypodermic for backache. From that time to date chemicals have been given along with vitamins according to indications. Satisfactory control without narcotics off and on in the hospital have not been possible since March 1944. X-rays have been given in very small doses over the area involved when the patient was complaining of pain along with the chemicals and vitamins between Aug. 11, 1941 and the present time. Irradiation of the pituitary was done by Dr. P. S. Arthur at the rate of 150 roentgens from alternate sides daily beginning March 6, 1944 until 1,500 roentgens had been given. This had no apparent influence on the course of the cancer. The treatment over the painful areas did give

From the Georgetown Medical Urological Service at Gallinger Hospital. Read in the symposium on "The Treatment of Cancer of the Prostate Gland" before the Section on Urology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

relief for a few days at a time. At present his chemical dosage has been built up to 5 mg. of diethylstilbestrol by hypodermic and 0.5 mg. of ethinyl estradiol three times a day, 300 mg. of thiamine hydrochloride and 300 mg. of nicotinic acid amide. His condition is not under control and he is going downhill.

CASE 3.—G., a white man aged 78, Nov. 8, 1940 complained of dysuria, frequency and dribbling. The patient had a large fixed gland. He was given 1 mg. of estradiol dipropionate by hypodermic three times a week without relief, so that on December 14 he had a transurethral resection. From that time until June 1, 1944 he has had diethylstilbestrol by hypodermic injection in 1 mg. doses two or three times a week at varying intervals. He has got along satisfactorily to date.

CASE 4.—M. C., a white man aged 69, had a perineal prostatectomy for cancer ten years previously, followed by incontinence until gradually complete obstruction developed and caused him to learn to catheterize himself twice a day. He was given diethylstilbestrol by hypodermic, 1 mg. three times a week, which resulted not only in ability to void but in a recurrence of incontinence. His residual urine was reduced to 4 ounces (120 cc.). He decided to return to catheterization rather than endure the incontinence. He died of cerebral hemorrhage.

CASE 5.—W. G., a Negro aged 67, on Oct. 17, 1940 had a transurethral resection for an obstructing malignant prostate accompanied by extensive osseous metastases and pain in the back. He was discharged on November 4, to return for x-ray therapy for the pain. He was readmitted on March 3, 1941 with hematuria, dysuria, frequency and a much more extensive prostatic mass. His general condition was very poor. He was given a transfusion and x-ray therapy. He was discharged on March 19 to return for further x-ray therapy. He was readmitted on Oct. 13, 1941 very cachectic, with swelling of the left leg. The phosphatase level was 62 Bodansky units, acid 12, alkaline 150. On Oct. 22, 1941 he had a castration. On October 30 he was discharged feeling pretty well except for slight pain in the left leg. He was readmitted on June 20, 1942 with extreme weakness and backache. The prostate was small. His hemoglobin was 25 per cent. He had several transfusions and was put on diethylstilbestrol, first 1 mg. and then 5 mg. per day, but he went downhill free from pain and died Nov. 4, 1942.

CASE 6.—J. D. J., a white man aged 66, was admitted to the hospital on June 13, 1941 with extensive carcinoma of the prostate and osseous metastases. He had had two previous transurethral resections. He was given 1 mg. of diethylstilbestrol by hypodermic three times a week, which was accompanied by steady improvement. He was castrated on June 20, following which there was no appreciable change in his course. On August 31 he was put on three 1 mg. injections of diethylstilbestrol weekly, from which he improved slowly but steadily until the date of his death on Feb. 15, 1942. The cause of death was lobar pneumonia and the other findings were as follows: Both adrenals were normal in size and there was a 1 cm. metastatic nodule in the right adrenal. The prostate was practically absent, though there were a few malignant cells in the tissue in the region of the prostate.

CASE 7.—V., a Negro aged 60, complained of pain in the back and legs, Dec. 10, 1941. The patient had extensive skeletal metastases and a fixed prostatic mass. He was given 1 mg. of diethylstilbestrol every other day and a high caloric and high vitamin diet with no improvement. On Jan. 16, 1942 castration was performed. Four days later the patient was out of bed, with a good appetite, and no pain or swelling except in the region of the scrotum and penis. He was discharged on February 13 and readmitted on May 20 with pain in the back and general weakness. He was put on a high vitamin and high caloric diet, and on June 14 on 1 mg. of diethylstilbestrol daily for ninety-three consecutive days. He experienced moderate relief from backache, but his general condition went progressively downhill and he died on Aug. 18, 1942. Autopsy revealed the most extensive cancer. The bladder wall was extensively involved. The ribs, lumbar vertebrae, pelvis, liver, both kidneys, both ureters and all of the retroperitoneal lymph glands were involved. The adrenals were about ten times their usual size. The medullary portion was relatively larger in comparison to the cortex than is usually seen. The prostatic mass itself was moderately enlarged.

CASE 8.—P. N., a white man aged 66, when seen on Nov. 15, 1942 presented an extensive rectal growth but no demonstrable metastases. A transurethral resection was done on November 18, and he was discharged on November 25 but was readmitted December 2 on account of hematuria. Five mg. of diethylstilbestrol was injected daily and relieved the hematuria. The patient was discharged on December 19 but returned complaining of hot flashes, which probably for some unaccountable reason were due to the fact that he was taking 15 mg. of diethylstilbestrol instead of 5 daily as he had been instructed. On Dec. 19, 1943 he reported that he had no complaint.

CASE 9.—J. S., a Negro aged 80, had very extensive metastases and a rectal growth with complete obstruction. Resection was performed on Sept. 14, 1942. Despite receipt of 5 mg. of diethylstilbestrol daily, he went down rapidly and died on October 25.

CASE 10.—L. W., a Negro aged 75, was treated by means of resection in March 1942 for an extensive obstructing rectal mass and was discharged on April 7 in fairly good condition. He was readmitted on December 8 with 500 cc. residual urine, no metastases to the bones but pronounced decalcification. On December 20 a resection was performed and he was put on a high caloric and high vitamin diet as well as on 1 mg. of diethylstilbestrol daily. He died on Feb. 1, 1943 of general weakness. There was no other complaint. Autopsy revealed a large prostatic mass shutting off the left kidney and producing a renal abscess. The adrenals were normal grossly and microscopically.

CASE 11.—R. K., a white man aged 60, was admitted with extensive bony metastases and a moderately large rectal mass. Castration was performed on Aug. 4, 1942 and the patient was discharged on August 17 but was readmitted in November 1943 with severe pain in the back. He was given 5 mg. of diethylstilbestrol daily until March 17, 1944. The breasts became so painful that the diethylstilbestrol had to be discontinued. The pain then recurred in the back, and the patient was again put on 5 mg. of diethylstilbestrol. Both breasts were removed surgically on May 19, 1944. Fifteen mg. of diethylstilbestrol had to be given daily in order to control his pain up to the present time. Avitaminosis as demonstrated by the tongue picture has rendered it necessary to administer large doses of vitamin B₁ and nicotinic acid amide. At present he is enjoying sun treatment and is now on an upward course.

CASE 12.—F., a white man aged 57, seen Jan. 10, 1941, had an inoperable carcinoma involving the prostate, bladder and right ureter. Three 1 mg. injections of diethylstilbestrol per week so improved his condition that on April 28, at the urge of the patient's family and physician, radical surgery was decided on. A left ureterostomy was done in which the left ureter was brought out in the left inguinal region. The anatomic and pathologic situation rendered ureterosigmoidostomy impossible. On May 14 the posterior portion of the urethra, the prostate, the bladder and the right lower ureter were removed *en masse*. Following this last operation the patient had the complication of stone production in the left kidney and ureter which called for x-ray investigation. The latter disclosed most extensive osseous involvement, which was not demonstrable at the time of the original examination of the patient. He died on July 4, 1941. The phosphatase was only 2 units (Bodansky).

CASE 13.—R. J., a Negro aged 72, seen March 6, 1943, suffered from complete retention and an extensive inoperable rectal mass. On March 20 prostatic resection was done and 1 mg. of diethylstilbestrol was given orally twice a day. The patient was discharged on April 8 with directions to take 1 mg. of diethylstilbestrol twice daily. On Jan. 12, 1944 there was no difficulty of any kind concerning the cancer and his only difficulty was one of circulation. His phosphatase estimates were not elevated.

CASE 14.—J. McL., a Negro aged 73, seen July 28, 1943, had pain in the back, hips and shoulders. He was emaciated. There were extensive osseous metastases. There was 75 cc. residual urine. On August 10 castration was performed. On August 17 there was complete relief from pain. The patient was put on a high vitamin and high caloric diet and was discharged on September 17. On Jan. 15, 1944 he returned extremely emaciated. The prostatic mass had regressed remarkably. He was given

seven transfusions. On February 23 ethinyl estradiol 0.1 mg. was ordered to be taken daily for a recurrence of his pain. The latter was effectively relieved and he was improving gradually until death occurred suddenly on March 20. Autopsy revealed that the gland was very small, the bones were extensively involved and both adrenals were much smaller than normal, with a preponderance of the medullary portion.

CASE 15.—S., a white man aged 66, seen Oct. 23, 1943, had complete retention of 56 ounces (1.68 liter). The gland was large and fixed. Between the foregoing date and June 1, 1944 the residual urine was decreased to 6 ounces (180 cc.) with diethylstilbestrol and ethinyl estradiol. The dose was 1 mg. of diethylstilbestrol orally daily and 5 mg. by hypodermic weekly up to April 15, 1944. From then until the present the diethylstilbestrol orally has been changed to 0.1 mg. of ethinyl estradiol daily. The dose of 5 mg. of diethylstilbestrol weekly by hypodermic has been continued.

CASE 16.—R., a white woman aged 24, married, seen June 27, 1942, presented extensive inoperable bladder cancer secondary to uterine cancer. She has had the original lesion and metastasis involving the left hip controlled by injections of 10 mg. doses of diethylstilbestrol in conjunction with radiation therapy, and to date the condition is being controlled.

COMMENT

It should be understood that the chemical treatment of carcinoma of the prostate should not be considered as a cure. When the original growth can be completely removed, surgery is unquestionably the procedure of choice in these cases. The chemical treatment should comprise (1) removal of the secreting tissue of the testicles, (2) the introduction of a group of chemical substances into the patient by one of three means—orally, by hypodermic injection or by pellet implantation, (3) a combination of the two preceding methods, (4) nutritional measures and (5) the administration of vitamins according to the appearance of the tongue as described in the foregoing cases.

The chemical substances employed consist of estradiol dipropionate, diethylstilbestrol, ethinyl estradiol and pellets of estradiol benzoate. Apparently all of these substances produce the same effect.

The practical objective of chemical treatment of carcinoma is the modification of the soil in which the malignant cells grow in such a way that their growth will be inhibited. As long as this condition can be maintained, the malignant process is satisfactorily controlled and is thus prevented from damaging the human host.

Dietary measures consist of a high caloric, high vitamin, low cholesterol nutritional intake. The indication for the high caloric, high vitamin diet is to improve the general health of the patient and to increase his resistance. The low cholesterol factor is on account of the observation that high cholesterol diets accelerate the development of cancer and low cholesterol diets decrease the rate of cancer growth.

An interesting observation on the inactivation of estrogenic substances has been made by Zondek, Sulman and Sklow to the effect that estrone is rapidly destroyed by the liver, whereas diethylstilbestrol is very slowly destroyed by the liver. This indicates that the liver is vitally involved in the problem of dosage and action of those substances we are engaged in administering clinically. Obviously the oral administration is less efficacious than hypodermic administration because of the fact that hypodermic injection circulates generally before the liver or other tissue has a chance to destroy it.

The foregoing cases bring up a number of practical considerations: There is no possible way of determining what the nature of response of an individual case will be to the therapy instituted. The dose of the substance used should be the smallest possible amount to accom-

plish satisfactory control. In many instances where castration has ceased to be effective additional control may be accomplished by subsequent administration of the aforementioned chemical substances. There are instances in which extreme metastatic involvement is not accompanied by an elevated phosphatase level. In rare instances the administration of these substances not only does not inhibit the malignant process but apparently stimulates it. Vitamins assist in improving the general condition of patients whose progress is unsatisfactory and to some degree assist in the relief of pain. Irradiation in small doses in conjunction with administration of these chemical substances will control pain to some extent. Irradiation of the pituitary in 1 instance failed to modify favorably the course of the malignant process. Irradiation of the adrenals has not been attempted to date. The procedure which will in most instances insure the most rapid favorable effect on the cancer is castration. The plan for the most prolonged satisfactory control of the malignant process consists of castration and the subsequent symptomatic administration of the aforementioned chemical substances in as small dosage as possible. The human being resents disturbance of biochemical balance, and the smaller the amount of biochemical substances introduced the less will be the biochemical reaction to the administration of these substances. The reaction to these chemical substances is not necessarily proportionate to the amount employed. The course of the group of patients who have been subjected to castration for cancer of the prostate parallels the course of those cases of carcinoma of the breast in which bilateral oophorectomy was performed as practiced by the British in the latter part of the nineteenth century. This procedure was subsequently discarded because of its eventual ineffectiveness and an operative mortality of 6 per cent. A phase of chemical influence of diethylstilbestrol in conjunction with radiation on cancer of the uterus and bladder in a female is difficult to understand, but its administration was instituted in 1 instance because of the favorable experiences of G. G. Binnie with this form of treatment in the case of a young female with uncontrollable metastatic osseous sarcoma. It should be emphasized that this patient was not subjected to this form of treatment until it was felt that the situation was hopeless, as it was, and that anything might be justifiable which offered any chance of benefit. This type of treatment should never be used for patients who are under any degree of satisfactory control. We have 1 patient who presents as close a duplicate to this problem as any one can see to whom we have not dared to give diethylstilbestrol because of the fact that she is being fairly satisfactorily controlled with irradiation and periodic removal of calcified necrotic portions of the bladder and uterus cystoscopically. The cases in which autopsies were obtained failed to demonstrate any uniformity in the condition of the adrenal glands. No opportunity has been afforded up to this time to do autopsies on the pituitary.

CONCLUSION

The chemical treatment of carcinoma of the prostate renders available a relatively simple method for the relief of pain and the varying periods of satisfactory inhibition of extensive malignant processes. While it is realized that the whole chemical problem is but scratched, enough has been observed to stimulate further constructive experimental and clinical efforts in this field.

1801 I Street N.W.

BREAST CHANGES DUE TO
DIETHYLSTILBESTROLDURING TREATMENT OF CANCER OF
THE PROSTATE GLAND

GORDON F. MOORE, M.D.

CARL A. WATTENBERG, M.D.

AND

D. K. ROSE, M.D.

ST. LOUIS

It has been demonstrated that benign lesions and cancer can be induced in animals by various estrogenic preparations. Lacassagne,¹ Gardner and his co-workers,² Burrows³ and others have shown that treatment of male mice with estrogens gives rise to a higher percentage of breast cancers than would occur normally and at an earlier age.

Lacassagne in 1932 gave weekly injections of estrogens to 5 male mice belonging to a strain in which 72 per cent of females were subject to spontaneous breast

Animals other than the mouse have been employed to show the hormonal mechanisms related to breast cancer. The rat, rarely the host of spontaneous malignant tumors of the breast, also was observed to develop an occasional cancer of the breast if given estrogens. There were also some definite benign lesions which occurred with the giving of estrogens as shown in

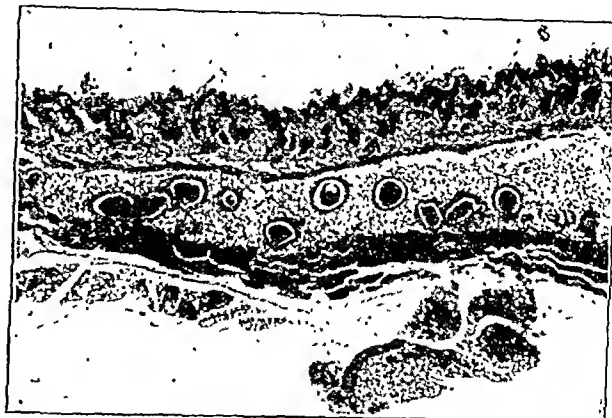


Fig. 2.—Breast of same mouse after eighty-five days of estrone treatment.



Fig. 1.—Breast of an adult male mouse with only two small ducts seen in subcutaneous tissue.

cancer, the males not being subject to this development. He then found breast cancer in each of the 5 male mice. Lacassagne presented interval sections of several of these male mice during estrone treatment. The breast of an adult male mouse is shown in figure 1, from Lacassagne's study. The section shows the subcutaneous tissue with only two small ducts with flattened and empty lumen. The breast of the same mouse is shown in figure 2 after having had eighty-five days of estrone treatment. There is an extensive proliferation of the ducts and epithelium present. There is also an active growth of the connective tissue stroma. The breast of this same male mouse is shown in figure 3 after having had one hundred and seventy-nine days of estrone injections. This section shows adenocarcinoma.

From the Department of Surgery, Urological Division, Washington University School of Medicine, and Barnes Hospital.

Read in the symposium on "The Treatment of Cancer of the Prostate Gland" before the Section on Urology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1. Lacassagne, A.: Apparition de cancers de la mamelle chez la souris male soumise à des injections de folliculine, *Compt. rend. Acad. d. sc.* 195: 630-632, 1932.

2. Gardner, W. U.; Smith, G. M.; Allen, E., and Strong, L. C.: Cancer of Mammary Glands Induced in Male Mice Receiving Estrogenic Hormones, *Arch. Path.* 21: 265-272 (March) 1936.

3. Burrows, H.: Carcinoma Mammariae Occurring in a Male Mouse Under Continued Treatment with Estrin, *Am. J. Cancer* 24: 613-616, 1935.

Eisen's⁴ experiments. These experiments show the breast changes in male rats treated with estrogens. The initial changes were present in the epithelium and consisted of proliferation, chiefly of the ducts; signs of functional activity of the cells were followed by microscopically visible enlargement of the lumens as a consequence of accumulated secretions. Exhaustion of cellular activity then occurred with subsequent evidence of disintegration of the cells or reversion of the epithelium to a resting stage. Proliferation of the fibrous tissue about cystic ducts was followed by diffuse fibrosis. Figure 4 is taken from Eisen's works and shows the advanced fibrosis of the rat breast tissue, with remnants of enlarged, distorted ducts and contracted epithelial spaces, and the displacement of the fat.



Fig. 3.—Breast of same male mouse after having had one hundred and seventy nine days of estrone injections. Section showing adenocarcinoma.

As the object of our studies is primarily the investigation of breast alterations in the male breast during treatment of prostatic cancer with diethylstilbestrol, these alterations will be described. The breast tissue

4. Eisen, M. J.: The Occurrence of Benign and Malignant Mammary Lesions in Rats Treated with Crystalline Estrogen, *Cancer Research* 2: 632-644, 1942.

biopsy was made before and periodically during administration of estrogens.

Section from an adult male breast before treatment with diethylstilbestrol is shown in figure 5. In this section the interstitial tissue is scarce and there is an occasional duct present in this thin, fibrous stroma, with a few small blood vessels. The epithelial cells of these ducts for the most part are of a single layer, with a thin basement membrane. The epithelial cells are usually large and pale staining, with large nuclei.

After the patient has been treated with diethylstilbestrol, the breast grossly becomes enlarged and often painful. Then as biopsy sections are taken at intervals during treatment, as shown in figure 6 to figure 9 inclusive, some very definite progressive changes take place. Figure 6 is from the same male breast after twelve days of treatment, receiving 240 mg. of diethylstilbestrol, or an average of 20 mg. per day. The same male breast is shown in figure 7 after forty-three days and 705 mg. of diethylstilbestrol, or an average of 16 mg. per day. Figure 8 is a section taken after seventy days, the patient having 1,395 mg. of diethylstilbestrol, or an average of 19 mg. per day. In the section shown in figure 9 we have a decided contrast to figure 5. Figure 9 is the male breast one hundred and twenty days

cells and often a deposition of the fat takes place, as is seen in figure 10, which is a section from another male breast. This patient had treatment four hundred and eighty-five days and had 680 mg. of diethylstilbestrol, or an average of 1.4 mg. per day.

Tissue removed from the prostatic cancer by transurethral resection before treatment with diethylstil-



Fig. 5—Breast tissue from man aged 63 before diethylstilbestrol treatment for carcinoma of prostate gland.

bestrol showed the same changes as described by Schenken and his co-workers.⁵ The prostate cancer before treatment with diethylstilbestrol showed most of the cells arranged in acini and some forming solid nests or cords of cells. The cell cytoplasm appeared swollen and foamy. The cell nuclei were round and were located in the central portion of the cell, many of the cells showing large, rounded vacuoles.



Fig. 4.—Section from male rat breast showing advanced fibrosis with remnants of enlarged distorted ducts and displacement of fat

after treatment, having had 2,145 mg. of diethylstilbestrol, or an average of 17 mg. per day.

During these progressive changes there is a proliferation of the duct epithelium. The cells of the ducts increase in their thickness from one to fifteen or more. Also the ducts become elongated. Then very early in these changes one can find a budding of these ducts. At times six or more buds can be found developing on the one duct which was present before treatment. Along with this duct epithelium proliferation and increase of connective tissue stroma, one also finds considerable edema of all the tissues, especially of the periductal connective tissue. The connective tissue becomes more indistinct in these areas of edema, since the tissue stains pale. There is also an increase in vascularity throughout the connective tissue. The duct epithelium along with its proliferations shows large cells of various shapes and sizes. The duct cells at times are multiplied to such an extent as to occlude the duct. The cells are deep staining and the basement membrane remains intact and not invaded. In none of the ducts can one find secretion if there is any secretory process taking place.

As the connective tissue increases and the amount of interstitial fibrosis is more pronounced, there can develop some flattening of the proliferated epithelial

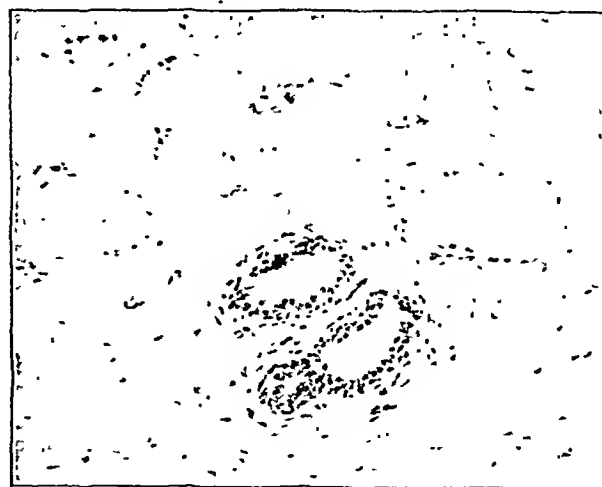


Fig. 6—Section from same male breast after twelve days and 240 mg of diethylstilbestrol. Average of 20 mg. per day.

The prostatic cancer tissue following treatment with diethylstilbestrol showed a regression of cytoplasm; a large percentage of the nuclei were deep staining and pyknotic, being small and irregular in shape. The pyknotic nuclei were scattered without arrangement

5. Schenken, J. R., Burnes, E. L., and Kahle, P. J.: The Effect of Diethylstilbestrol and Diethylstilbestrol Dipropionate on Carcinoma of the Prostate Gland, *J. Urol.* 18: 99-112, 1942

In some spaces no nuclei could be found. The nuclear diameter had reduced nearly 50 per cent in most sections since treatment. In the center of many acini, pyknotic nuclei and remnants of cell membranes could be found crowded together without attachment to the periphery of the acini.

These breast changes which have been found are not serious but are dangerous in that the patient often stops taking diethylstilbestrol when the breast pains begin or when they become severe.

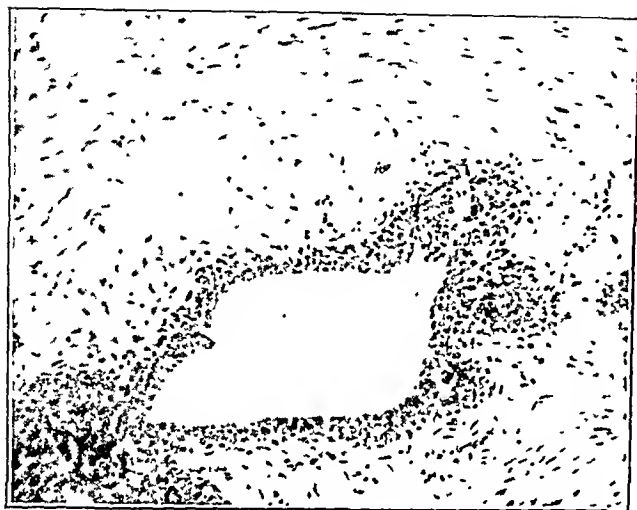


Fig. 7.—Same male breast after forty-three days and 705 mg. of diethylstilbestrol. Average of 16 mg. per day.

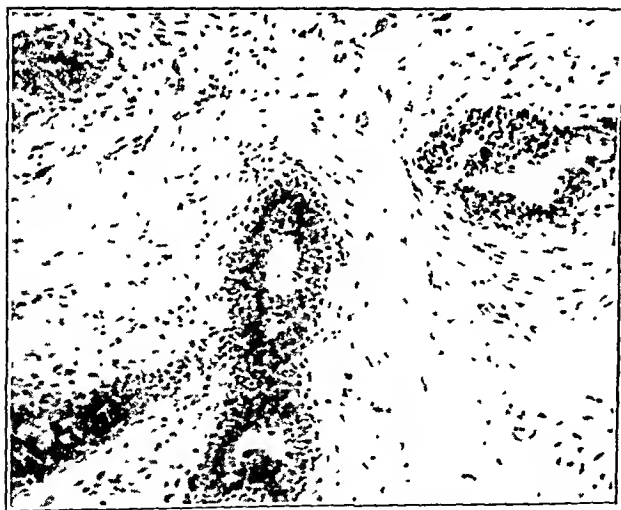


Fig. 8.—Male breast after seventy days and 1,395 mg. of diethylstilbestrol. Average of 19 mg. per day.

The breast enlargement grossly, as well as breast proliferation microscopically, is no indication as to the amount of benefit the patient is receiving as regards the cancer of the prostate gland. Many patients have very little pain in their breasts and slight microscopic changes, and still the prostate gland, which is cancerous, is reduced greatly in size. The patient is relieved also of his pain and gains weight. Other patients show grossly enlarged and painful breasts, indicative of a chronic cystic mastitis, and well defined breast hyperplasia microscopically, with very little change in the prostatic cancer, or the patient's pain

is not benefited and he does not regain his weight loss. As yet we have had no patient benefit more with orchiectomy than with diethylstilbestrol. That is, if the patient is taking diethylstilbestrol with slight or no benefit and then has an orchiectomy, he has no change



Fig. 9.—Male breast after one hundred and twenty days and total of 2,145 mg. of diethylstilbestrol. Average of 17 mg. per day.

in any noticeable degree. Nevertheless we reserve orchiectomy for those not benefited by endocrine therapy. Such benefits are reported by Huggins.⁶

As yet we have observed no malignant changes in the breast from diethylstilbestrol and rather doubt if they ever will be found. One of the difficulties which still confronts us is the correct dosage of diethylstilbestrol necessary when treating these cancers of the prostate. We have given 60 to 80 mg. per day, but how much of it is excess or waste is not known.

The work of Dr. Huggins is a great advance in medicine. It has had a great deal of comment. Still it



Fig. 10.—Section from another male breast having had four hundred and eighty-five days and 680 mg. of diethylstilbestrol. An average of 1.4 mg. per day. Showing fat deposit and fibrosis.

deserves nothing but appreciation and thanks. There certainly are a large number of prostatic cancer patients who feel that way.

6. Huggins, C.; Scott, W. W., and Hodges, C. V.: *Studies on Prostatic Cancer*, J. Urol. 46: 997-1006, 1941.

BILATERAL ORCHIECTOMY FOR CARCINOMA OF THE PROSTATE GLAND

CLINICAL EXPERIENCE

JOHN L. EMMETT, M.D.

AND

LAURENCE F. GREENE, M.D.

Member of Section on Urology

ROCHESTER, MINN.

The investigations of Huggins and his associates concerning castration in cases of carcinoma of the prostate gland have been stimulating. The time now has come for members of the medical profession to report their experiences with the procedure in order to assist in its final evaluation as treatment. Although more time is needed to follow patients before all questions can be answered finally, preliminary reports seem justifiable and may be helpful. For this reason we are submitting our experience at the Mayo Clinic up to the present date.

DATA CONCERNING ALL PATIENTS WHO UNDERWENT BILATERAL ORCHIECTOMY FOR CARCINOMA OF THE PROSTATE GLAND

This report deals with 220 patients who received a clinical diagnosis of carcinoma of the prostate gland and who underwent bilateral orchiectomy at the clinic from June 1, 1941 to Dec. 31, 1943 inclusive. Of these patients 62 have returned one or more times since orchiectomy for examination. Information concerning the remainder has been sought by letters of inquiry. We have up to date information on 215 of these patients, and it is on this number that this report will be based. The diagnosis has not been proved by microscopic examination of prostatic tissue in all of these cases, because in some cases only bilateral orchiectomy was performed and an operative procedure was not performed on the prostate gland. Also in a few cases, as is not uncommon following transurethral resection of a prostate gland which is the site of a malignant growth, the tissue obtained for examination was reported to be benign. This of course is due to the fact that the growth involves chiefly the posterior lobe and the resection is not carried deeply enough to encounter it. Nevertheless we feel that there is sufficient clinical evidence concerning all of these 215 cases to justify their being regarded definitely as cases of carcinoma of the prostate gland.

Transurethral resection was performed in 158 of the cases, in addition to orchiectomy. In 115 cases transurethral resection was done at approximately the same time as orchiectomy; in 43 cases several months or years prior to orchiectomy.

Of the 215 patients traced, 163 had clinical, roentgenographic or chemical¹ evidence of metastasis. In 52 cases metastasis could not be demonstrated.

Serum Acid and Alkaline Phosphatase Levels.—When speaking of metastasis as determined by "chemical" means, it is necessary to define our normal values for serum acid and alkaline phosphatase. There has been much discussion in the literature concerning this subject. We have preoperative serum acid and alkaline phosphatase determinations expressed in King-Arm-

strong units per hundred cubic centimeters of serum in 159 cases in this study. In table 1 these values are grouped to show the values for patients who have clinical and roentgenographic evidence of metastasis and those who have not. It will be noticed that Huggins's original values of 3.5 for the upper limit of normal for the serum acid phosphatase seem to be correct rather than 5.0, which is now commonly used. Using 3.5 as the upper limit of normal there are still approximately 35 per cent of false negatives, whereas if 5.0 is considered the upper limit of normal the proportion of false negatives rises to approximately 54 per cent. In the same manner table 1 suggests that the upper limit of normal for the alkaline phosphatase is somewhere between 5.0 and 10.0, which would again substantiate Huggins's original value of 8.0 as the

TABLE 1.—Phosphatase Determination, Expressed in King-Armstrong Units, in 159 Cases of Carcinoma of the Prostate

King-Armstrong Units	Clinical or Roentgenologic Evidence of Metastasis			
	Present		Not Present	
	Acid Phosphatase	Alkaline Phosphatase	Acid Phosphatase	Alkaline Phosphatase
More than 50.....	8	24	0	0
20.1 to 50.....	8	27	0	1
10.1 to 20.....	18	32	1	5
5.1 to 10.....	24	30	0	20
3.6 to 5.....	24	5	3	4
0 to 3.5.....	44	8	29	3
Total.....	136	126	33	33

TABLE 2.—Correlation of Serum Acid and Alkaline Phosphatase Determinations in 159 Cases of Carcinoma of the Prostate Gland

Normal values: Acid phosphatase 0-3.5 K.-A. units per 100 cc.
Alkaline phosphatase 0-10.0 K.-A. units per 100 cc.

Acid Phosphatase	Alkaline Phosphatase	Clinical Evidence of Metastasis	
		Present	Not Present
Elevated	Elevated	65	3
Elevated	Normal	17	1
Normal	Elevated	18	3
Normal	Normal	26	26
Total (159 cases).....		126	33

upper limit of normal. For the purpose of this study we have arbitrarily chosen the values for the upper limits of normal to be 3.5 King-Armstrong units for the acid phosphatase and 10 King-Armstrong units for the alkaline phosphatase. The relationship of the values for acid and alkaline phosphatase is shown in table 2. This table suggests that the importance of the alkaline phosphatase has been minimized in the literature and that probably the level of alkaline phosphatase should carry more diagnostic weight than is accorded it at present.

Survival Rates Following Orchiectomy.—It seems important to decide whether bilateral orchiectomy will increase the length of life of patients who have carcinoma of the prostate. It is too soon to make positive statements in this regard. Nevertheless, attempts to compare mortality rates already have appeared in the literature. In a well followed group of cases of carcinoma of the prostate in which transurethral resec-

From the Section on Urology, Mayo Clinic.
Read in the Symposium on "The Treatment of Cancer of the Prostate Gland" before the Section on Urology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1. As shown by determination of the serum acid and alkaline phosphatase levels.

tion was performed at the clinic between the years 1924 and 1937 Thompson² reported that of the total 326 patients 26.2 per cent died within the first year after resection and 50.5 per cent by the end of the second year. Comparative figures for the group of cases that we are reporting in the present paper show that fatalities occurred in 23 per cent within the first year after orchietomy and in only 39.4 per cent by the end of the second year.

These figures require some explanation before any statistical inference is drawn. In the first place the number of cases in our group is of necessity smaller than in the Thompson group owing to the relatively short period during which the operations were done and the short follow-up. For instance, in only 185 of our cases has a year or more elapsed since orchietomy and in only 68 have two or more years elapsed. Also these figures are not entirely fair to the patients on whom orchietomy was performed because the length of life has been computed from the date of the orchietomy. In some of these cases the diagnosis had been made and transurethral resection performed months or years previous to the castration. Another fact which must be taken into consideration is that in the Thompson group little if any selection of cases was made, so that it includes many cases in which the disease was in its early stages and in which no evidence of extension or metastasis was present. Although our series of cases includes a moderate number (52) of patients who had no evidence of metastasis, this proportion would have been greatly increased if castration had been done routinely in all cases of carcinoma of the prostate. In the Thompson series there was no selection of cases as far as the presence or absence of metastasis was concerned. With these factors taken into consideration, therefore, the comparison suggests that in general length of life is prolonged as a result of castration. This subject will be touched on again in the section discussing the patients who had metastasis.

Incidence of Reobstruction Following Transurethral Resection and Orchietomy.—Whether or not orchietomy tends to prevent recurrence of obstructive symptoms after transurethral resection has been a subject

TABLE 3—*Relief from Pain by Orchietomy in 130 Cases of Metastatic Carcinoma of the Prostate Gland*

Malignancy, Grade	Results Not Noted on Record	Degree of Relief from Pain					Total Cases
		100%	75%	50%	25%	No Relief	
1 and 2	2	16	1	2	2	2	27
3 and 4	7	22	8	3	1	2	43
Unknown	4	22	11	11	5	7	60
Total	13	60	22	16	8	11	130

of considerable interest. During the years 1937 to 1941 inclusive 517 patients who had carcinoma of the prostate gland underwent transurethral resection at the clinic. Twenty-two (4.3 per cent) of these patients returned within the first year with recurrent obstruction demanding further resection, while another 11 patients (2.1 per cent) returned during the second year following resection for the same reason. It is obviously impossible to make an accurate comparison of this group of patients (all of whom have been followed

two years or more) with the series of cases that we are reporting here. From the data available, however, interesting deductions can be made. For instance, of all patients in this group who underwent simultaneous transurethral resection and orchietomy none returned within the first year with reobstruction. (One hundred and eighty-five patients have been followed one year or more since orchietomy.) Only 1 such patient has returned for subsequent resection. This patient returned

TABLE 4—*Duration of Relief from Pain by Orchietomy in 60 Cases of Metastatic Carcinoma of the Prostate Gland*

Duration of Relief from Pain, Mos	Cases
0-3	0
4-6	5
7-9	5
10-12	10
13-15	3
16-18	2
Still relieved..	32
Not known	3
Total	60

sixteen months after orchietomy. One patient on whom only orchietomy was done returned seventeen months later for transurethral resection. Four other patients in this series returned for transurethral resection, but in all of the 4 cases the original prostatic operation had been performed many months previous to the orchietomy. In all of them the time interval between the original prostatic operation and subsequent transurethral resection was more than two years. These figures suggest that there must be a definite retardation of the rate of the local growth following orchietomy.

Results of Orchietomy in Cases in Which Metastasis Occurred.—Of the 215 traced patients in this study, 163 had evidence of metastasis as determined clinically, roentgenographically or chemically (by means of serum phosphatase levels). In a study of this kind, in which it is necessary to rely principally on follow-up letters from patients to determine the course of the disease, one must choose data which are least open to error of interpretation. By far the outstanding clinical evidence of metastasis is pain, and for this reason we have chosen this symptom as the prime indication of the course of the disease. In an effort to keep our data as accurate as possible, in our most recent follow-up letter we asked the patients who had suffered from pain prior to orchietomy to state in percentage form the degree of relief that they secured within the first few weeks after orchietomy. From their answers we have corrected the data on our records where indicated.

Of the 163 patients who had metastasis, 130 had complained of pain prior to orchietomy. Table 3 shows the degree of relief that these patients secured from the operation; the results are classified further on the basis of the degree of malignancy of the prostate according to Broders' grading (where those data are available). It will be noticed that 60 of the 130 patients (46 per cent) secured complete relief and that another 22 patients were greatly improved. This suggests that, in more than 60 per cent of cases in which there was pain due to metastasis, great immediate relief can be expected if orchietomy is performed. It is also suggested from table 3 that the degree of malignancy is not a factor in the immediate results obtained.

² Thompson, G. J. Transurethral Resection of Malignant Lesions of the Prostate Gland, J. A. M. A. 120: 1105-1109 (Dec. 5) 1942

The next important factor is the length of time these patients are relieved of their pain and whether the relief is permanent in any cases. To secure this information we have compiled in table 4 data from the 60 patients who obtained 100 per cent immediate relief following orchiectomy. In approximately half of these cases the pain has recurred, the length of relief varying from four to eighteen months, the largest group of cases falling into the seven to twelve month period. Information regarding the 32 patients who are still relieved of their pain is compiled in table 5. The most interesting observation here is that 13 patients have remained free from pain for more than eighteen months. In 8 of these 13 cases the grade of the lesion was known. Six lesions were of a high grade of malignancy (grade 3 or 4). These data, though of interest, comprise too few cases to enable one to draw any conclusions regarding the relationship of the grade of the tumor to the length of relief to be expected from orchiectomy.

Results of Orchiectomy in Cases in Which Metastasis Did Not Occur.—This part of the problem is at present the most important to be settled as far as therapeutics is concerned. Should orchiectomy be done as a prophylactic measure when metastasis cannot be demonstrated or should it be done only to relieve symptoms from metastasis? In this study we have 52 patients who were without demonstrable evidence of metastasis at the time when bilateral orchiectomy was performed. Data concerning this group of patients are given in table 6. In evaluating this table it should be borne in mind that it is not always possible to demonstrate the presence of metastasis, so that some of these patients no doubt had suffered from metastasis prior to orchiectomy. Of these 52 patients, 35 per cent have already shown signs of metastasis and 15 per cent are dead. More cases and a longer follow-up will be necessary before one can draw accurate conclusions.

Obstruction of the Vesical Neck.—Will bilateral orchiectomy effect enough regression of the local growth to relieve urinary obstruction and thereby obviate the

TABLE 5.—Interval of Time Since Orchiectomy Correlated with Malignancy in 32 Cases in Which Metastatic Pain Is Still Absent

Interval Since Operation, Mos.	Grade of Malignancy			Total
	1 and 2	3 and 4	Unknown	
4-6.....	..	..	2	2
7-9.....	4	1	1	6
10-12.....	1	2	3	6
13-15.....	1	..	1	2
16-18.....	1	1	1	3
19-21.....	..	2	1	3
22-24.....	1	2	2	5
25-27.....	1	2	1	4
28-30.....	..	..	..	0
31-33.....	..	..	1	1
34-36.....	..	..	..	0
Total.....	9	10	13	32

necessity of operation on the vesical neck? In this series 62 patients underwent orchiectomy alone. All others underwent transurethral resection either at the same time or at some previous time. Of these 62 patients, 24 suffered from definite obstructive symptoms. Seventeen of these 24 patients (71 per cent) experienced definite improvement. The remainder did not obtain any relief of symptoms.

Regression of Local Growth.—Only 62 of our patients have returned for reexamination. It is very difficult to make an accurate statement concerning the size and

consistency of the prostate, as many variable factors are present. Some patients had a transurethral resection while others did not. Some patients were examined by different consultants on their return. At best it is difficult from one's notes to decide whether minor degrees of change have occurred. Evaluating these data as honestly as possible, we obtained the following results: Of 47 cases in which there were sufficient data

TABLE 6.—Incidence of Occurrence of Metastasis and Length of Life After Orchiectomy in 52 Cases in Which There Was No Evidence of Metastasis at Time of Operation

Interval Since Operation, Mos.	Total Cases	Evidence of Metastasis Has Appeared *	Dead
0-6.....	0	..	..
7-12.....	5	1	1
13-18.....	16	7	3
19-24.....	20	6	2
25-30.....	11	4	2
Total.....	52	18	8
Per cent.....	100	35	15

* Includes patients who have died but who presented evidence of metastasis before death.

in the records for evaluation, 5 showed such definite regression that it would have been impossible from digital rectal examination to make a diagnosis of carcinoma of the prostate. Ten more showed definite regression, while in the remaining 32 no change could be demonstrated.

Roentgenographic Evidence of Metastasis.—Of the 62 patients who have returned for reexamination there was roentgenographic evidence of metastasis prior to orchiectomy in 45. In only 6 of these was improvement noted in subsequent roentgenographic study. In 3 of these cases, however, there was a complete disappearance of the metastatic lesion in the bone. In 7 cases in which metastasis could not be demonstrated roentgenographically prior to orchiectomy it appeared after orchiectomy.

Paralysis and Pathologic Fracture.—We have encountered in this series 1 case in which pathologic fracture of the femur healed spontaneously after orchiectomy. One patient entered the hospital suffering from complete paralysis of the lower extremities from metastasis to the spinal cord. There was no improvement after orchiectomy and the patient died within two months. In another case paralysis developed thirty-six hours after orchiectomy. Follow-up letters disclose the fact that in 4 more cases paralysis has developed since orchiectomy. In 2 of these cases it occurred within nine months, in 1 within five months, and in 1 within a "few" months after orchiectomy.

DATA CONCERNING A "CLOSED" GROUP OF PATIENTS WHO HAVE BEEN FOLLOWED EIGHTEEN MONTHS OR MORE SINCE ORCHIECTOMY

We have selected from the entire group of 215 patients those on whom orchiectomy was done prior to November 1942. As of May 1, 1944 (the date of our most recent inquiry) this yields a group of 133 patients on whom orchiectomy had been done eighteen months or more previously. We are reporting these patients here as a "closed" group of patients and shall make additional reports on this group from time to time. We believe that this may be a more accurate method of the final evaluation of this problem than analysis of

results for a group less homogeneous with respect to length of observation since orchietomy.

Of the 133 patients in the "closed" group 96 showed evidence of metastasis prior to operation, while in 37 no metastasis could be demonstrated. Fifty-nine of these patients are already dead (table 7). It will be

TABLE 7.—"Closed Group" (133 Patients Followed for Eighteen Months or Longer): Duration of Life in 59 Cases in Which Death Has Occurred Since Orchietomy

Duration of Life, Mos.	Metastasis Prior to Operation	
	Not Present *	Present †
0-6.....	..	16
7-9.....	..	5
10-12.....	..	10
13-18.....	3	7
19-24.....	3	10
25-30.....	1	4
Total.....	7	52

* Total in closed group 37 cases.

† Total in closed group 16 cases.

TABLE 8.—"Closed Group": Relief from Pain by Orchietomy in 78 * Cases of Metastatic Carcinoma of the Prostate

Malignancy, Grade	Results Not Noted on Record	Degree of Relief from Pain					Total Cases
		100%	75%	50%	25%	No Relief	
1 and 2.....	..	5	..	2	2	1	10
3 and 4.....	6	13	7	3	..	1	20
Unknown.....	3	15	6	6	4	4	38
Total.....	9	33	13	11	6	6	78

* Eighteen patients who had metastasis did not have pain.

noticed that 21 (22 per cent) of the patients who showed evidence of metastasis died within the first nine months after operation. In other words, 78 per cent survived the first nine months as compared with 33 per cent in Bumpus's³ series. This survival rate is almost identical with that given by Nesbit and Cummings⁴ in their "closed" series of cases.

Of the 96 patients who gave evidence of metastasis, 78 had pain prior to operation. The degree of relief following operation is shown in table 8. Thirty-three of the patients secured 100 per cent relief of pain, while another 13 patients were greatly improved, making a total of 59 per cent who secured definite immediate relief. As in the data given previously for the entire group, there seems to be no correlation between the grade of the tumor and the immediate response to castration. The length of time the patients were relieved of pain is shown in table 9. It corresponds roughly to that of the large group, the majority of patients falling into the seven to twelve month period. In table 10 is a summary of data on the 13 patients of this group who are still relieved of pain, all of them being followed longer than eighteen months. As mentioned previously, there seems to be no correlation between the grade of malignancy and the length of relief, although it can be said that the lesions of higher grades seem to respond as well as, if not better than, those of the lower grades.

J. Bumpus, H. C., Jr.: Carcinoma of the Prostate: A Clinical Study of 1,000 Cases, Surg., Gynec. & Obst. 43: 150-155 (Aug.) 1926.
4. Nesbit, R. M., and Cummings, R. H.: Prostatic Carcinoma Treated by Orchietomy: A Secondary Report Based on 75 Cases Observed for at Least Twenty-One Months Following Operation, J. A. M. A. 124: 80-81 (Jan. 8) 1944.

ESTROGENIC THERAPY

Our experience with treatment by means of estrogens in this disease has not been sufficiently well studied yet to allow us to make any positive statements regarding its efficacy. It has been our impression that orchietomy yields more dramatic and immediate results than estrogenic therapy. Occasionally, however, a most brilliant result is achieved with diethylstilbestrol. We have encountered several cases in which orchietomy has given relief when estrogenic therapy had failed. We have also encountered a few cases in which estrogens have seemed to give relief from pain after orchietomy had failed. These cases have not been striking, however, and the results were not dramatic. We are at present in the process of trying to evaluate more accurately our results with estrogenic therapy.

CONCLUSIONS

The indication for bilateral orchietomy is carcinoma of the prostate with metastasis. Bilateral orchietomy is especially efficacious when the metastatic growths have given rise to symptoms. The period of relief following orchietomy varies from months to years. Whether any patients will remain permanently relieved seems extremely doubtful. Apparently the large majority of patients have a recurrence of symptoms within a year. Whether or not "prophylactic" orchietomy (done in the early stages of the disease before metastasis has appeared) measurably influences the course of the dis-

TABLE 9.—"Closed Group": Duration of Relief from Pain by Orchietomy in 33 Cases of Metastatic Carcinoma of the Prostate Gland

Duration of Relief from Pain, Mos.	Cases
0 to 3.....	0
4 to 6.....	3
7 to 9.....	2
10 to 12.....	7
13 to 15.....	3
16 to 18.....	2
Still relieved *.....	13
Not known.....	3
Total.....	23

* Eighteen months or more after orchietomy.

TABLE 10.—"Closed Group": Interval of Time Since Orchietomy Correlated with Grade of Malignancy in 13 Cases in Which Metastatic Pain Is Still Absent

Interval Since Operation, Mos.	Total Cases	Grade of Malignancy		
		1 and 2	3 and 4	Unknown
19 to 21.....	3	..	2	1
22 to 24.....	5	1	2	2
25 to 27.....	4	1	2	1
28 to 30.....	..	..	..	..
31 to 33.....	1	..	..	1
Total.....	13	2	6	5

case is not yet known. This problem cannot be settled until more time has elapsed and a larger series of cases in which "prophylactic" orchietomy has been performed has been studied. Until this problem has been definitely settled, our present practice is to advise orchietomy primarily for patients suffering from metastasis, for the relief of metastatic symptoms. Results to date suggest that when orchietomy is performed in

conjunction with transurethral resection the frequency of recurrent obstructive symptoms requiring subsequent prostatic resection is reduced; furthermore, if such symptoms do appear the time interval between resections is increased. We are also treating a group of patients who do not show evidence of metastasis with estrogens after transurethral resection to see if the course of the disease can be appreciably altered over a substantial period. We are interested to know whether preliminary estrogenic therapy in such cases will tend to nullify the palliative effects of castration if the latter should become necessary for the control of symptoms later on.

EXPERIENCE WITH ORCHIECTOMY FOR CARCINOMA OF THE PROSTATE

H. C. BUMPUS JR., M.D.
BEN D. MASSEY, M.D.
AND
EARL F. NATION, M.D.
PASADENA, CALIF.

The wave of enthusiasm for performing orchiectomy in the treatment of carcinoma of the prostate seems to have passed its crest. As experience has accumulated and patients have been observed for longer periods of time it has become apparent that the beneficial early effects, so eagerly reported at first, are not the whole story. Some writers are now questioning the advisability of routinely performing orchiectomy for carcinoma of the prostate and others are denouncing the operation. However, its fate probably will not be the limbo to which orchiectomy for benign prostatic enlargement was finally relegated at the turn of the century. The disillusionment caused by the discovery that there has not been found, after all, a cure for cancer of the prostate should not cause the too hasty repudiation of a procedure which offers some help, where there was so little hope before. The palliation affected by the operation is too striking and obvious to permit its abandonment. It remains, rather, to determine in which cases and at what stage of the disease orchiectomy should be employed and when estrogenic hormone therapy may be substituted or used to supplement the operation. It is essential, therefore, that as many cases be studied and reported as possible, even in small series such as the present one, that these problems may be solved soon by cumulative experience.

RESULTS OF ORCHIECTOMY

Twenty-five patients with carcinoma of the prostate on whom bilateral orchiectomy was performed in private practice between July 1941 and December 1943 form the basis for this report. As private patients can be followed more closely than those treated in large charity institutions, more exact information may often be gained from fewer cases. Included in the group are the 6 cases previously reported by one of us.¹ The majority of patients were given diethylstilbestrol in doses of 1 to 3 mg. daily after orchiectomy.

The age distribution of the patients was as follows: sixth decade of life, 3; seventh decade, 12; eighth decade, 9; ninth decade, 1.

All the patients, with 1 exception, showed decided improvement following the operation. This improvement consisted of such changes as increased vigor, strength, weight and appetite, a sense of well-being, cessation of pain and diminished urinary difficulty. The 1 patient who was not improved remained about the same for six months before beginning to grow worse. He was alive thirteen months after orchiectomy, his metastases progressing and his health failing.

Five of the 25 patients (20 per cent) have had definite recurrence of their symptoms, 4 after twelve to sixteen months' remission and 1 after six months. Three of these patients have already died. Two other patients have died of causes unrelated to their carcinomas, eighteen and fifteen months after orchiectomy. Neither patient had had recurrence of pain or other symptoms referable to his prostatic carcinoma.

Seventeen patients (68 per cent) are alive and apparently not suffering from activity of their carcinoma.

Three of the 4 patients (75 per cent) operated on two years ago or more are alive and well, one thirty months after orchiectomy. The malignancy in 2 of these cases was grade 3. One of the 3 had extensive pulmonary metastases which receded after orchiectomy. The fourth is failing rapidly twenty-nine months after operation. The tissue in this case was also grade 3 malignancy. Of the 11 patients operated on between one and two years ago 5 (46 per cent) are dead, 3 of carcinoma and 2 of other causes. One received no benefit. Four (36 per cent) are well and 1 relapsed after twelve months' relief. All of the 10 patients operated on within the past year remain free of symptoms of advancing malignancy.

Tissue from the prostate was available for microscopic examination in 15 cases. These were graded as follows: grade 2, 6; grade 3, 7; grade 4, 2. All the patients whose tissues were graded 2 are alive and free from symptoms of malignant activity, one thirty months after surgery. Two of those graded 3 relapsed, one sixteen and the other thirteen months after orchiectomy. The second of these died two years after his operation, while the other is still alive. Of the 2 patients with grade 4 malignancy, 1 is living and well fourteen months after surgery; the other died eighteen months following operation of other causes than malignancy.

There was considerable variation in the length of time required for softening of the prostate after orchiectomy and diethylstilbestrol. There seemed to be no correlation between the length of the interval and the grade of malignancy. Rapid softening, while usually a favorable sign, occurred in 2 patients who died following recurrence of symptoms, 1 six and the other thirteen months after orchiectomy.

The testes from our patients were not weighed, as suggested by Huggins,² but were examined microscopically. There was no discernible correlation between the microscopic appearance of the testes and the degree of relief obtained.

One factor which has not been given adequate consideration in some studies is the removal of urinary obstruction. Transient improvement may follow improved urinary drainage alone. Thirteen of the patients considered here had transurethral prostatic resection in addition to orchiectomy. Twelve had no surgical procedures other than orchiectomy. Only 1

Read in the symposium on "The Treatment of Cancer of the Prostate Gland" before the Section on Urology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.
1. Bumpus, H. C., Jr.: Carcinoma of the Prostate Gland Treated by Castration, *Tr. Am. A. Genito Urin. Surgeons* 35: 329, 1942.

2. Huggins, C.: Effect of Orchiectomy and Irradiation on Cancer of the Prostate, *Ann. Surg.* 115: 1192, 1942.

of the 5 patients who had relapse of symptoms had required prostatic resection. Twelve of the 19 patients not having relapse required transurethral resection in addition to orchiectomy. (In those cases in which tissue was not removed the diagnosis was made by the usual means, including roentgenography and phosphatase determinations.) Improvement was no more consistent or striking in those patients who had transurethral resection than in those having orchiectomy alone, except that symptoms of obstruction were relieved more promptly in the former patients.

The psychic improvement that some of these patients undergo immediately after castration has not been emphasized sufficiently in the literature. One of our patients, alive nearly a year after his orchiectomy, is a striking example of the change in mental outlook produced by castration. When first seen in consultation he was extremely apathetic, responded sluggishly to questioning and didn't give any evidence of caring whether he was castrated or not. He had no regard for his personal appearance. His bed clothing was covered with the usual amount of tobacco juice and soup stains seen in this type of case. He showed absolutely no interest in the daily news or his surroundings. In contrast, the day after his castration he was eagerly demanding the early delivery of the morning papers and responded readily to all questions. A few weeks after his dismissal from the hospital his family physician asked whether the striking mental improvement had been reported in the literature. He stated that, while his patient had formerly cared nothing about his personal appearance or exhibited the slightest interest in the little niceties of social intercourse, he now greeted him most effusively at the time of his professional visits, graciously proffering him a chair. His clothes, formerly spotted and rumpled, were now pressed and clean. A transurethral resection had not been done in this case, so that these improvements cannot be attributed to improved urinary elimination; nor had estrogenic therapy been instituted to confuse the picture.

COMMENT

It is becoming apparent that all patients with prostatic cancer will eventually have a relapse of symptoms if they live long enough following orchiectomy. It is not yet possible to predict accurately the percentage of patients who will survive beyond the average expectancy, which is about thirty-one months after the diagnosis is made.³ We agree with Nesbit and Cummings⁴ that no criteria have been found for predicting the prognosis in any case.

Since prostatic cancer is not cured by orchiectomy and estrogenic hormones, it is essential that the best means of control be determined. There remains no doubt that temporary control is possible.

Crane and Rosenbloom,⁵ in an analysis of 340 cases of cancer of the prostate seen at the Los Angeles County General Hospital from July 1, 1938 to Jan. 1, 1944, report that simple drainage or transurethral resection, or endocrine therapy alone did not produce such satisfactory improvement as when combined with cas-

tration. In their series of cases the survival time was longest for the patients who had received all three forms of treatment in combination.

It is sometimes argued that, in view of the fact that one is dealing with a hopeless malignant process, all methods of combating it should be employed with the least possible delay. If, by this combined therapy, it were possible to cure the disease, such an argument would be logical. However, since all forms of therapy to date have proved only palliative, the prolongation of such treatment seems preferable to its immediate total application. With the patients who are the subjects of this report one wonders whether, if they had been treated by estrogenic substance alone until such evidence of advance of the cancer as pain and cachexia had occurred, castration would then have given the same spectacular results produced by orchiectomy prior to the administration of endocrine therapy. A few reported cases of relief of recurrent symptoms by estrogens after orchiectomy, and by orchiectomy after preliminary estrogens, suggest the possibility that these two weapons should be saved and used separately and in succession, rather than in conjunction, to afford the patient the greatest relief.

The effect of orchiectomy following preliminary estrogenic therapy might not be as dramatic as primary orchiectomy but might prolong life and the period of relief. Since Huggins's² early reports it has been thought that estrogenic hormones alone would not suffice. Recent reports contradict this.⁶ We have been favorably impressed by our results in a number of cases so treated. We have 3 patients who remain well after over two years treatment with diethylstilbestrol alone, in doses of 1 to 2 mg. daily.

Nesbit and Cummings⁴ conclusion seems to be a logical one "that the maximum benefit to the patient may be derived by delaying endocrine treatment until indicated by the onset of symptoms arising from advanced or metastatic lesions." It is to be hoped that this will assure the patient the maximum period of comfort as well as prolong his life. Whether such treatment will require orchiectomy or whether estrogenic hormone therapy will suffice remain moot questions.

CONCLUSIONS

The results of orchiectomy in 25 cases of carcinoma of the prostate confirm the impression that temporary relief accrues to almost all patients. Forty per cent of our patients who have been observed for a year or more following orchiectomy have had recurrence of symptoms. It is to be anticipated that they will all eventually relapse.

It therefore remains to regulate better our use of orchiectomy and estrogens. They probably should be delayed until symptoms of an advanced malignant condition are manifest, then be used separately and in succession rather than in conjunction.

112 North Madison Avenue, Pasadena 4.

3. Bumpus, H. C., Jr.: *Carcinoma of the Prostate: A Clinical Study of 1,000 Cases*. Surg., Gynec. & Obst. 43:150, 1926.

4. Nesbit, R. M., and Cummings, R. H.: *Prostatic Carcinoma Treated by Orchiectomy*. J. A. M. A. 124:80 (Jan. 8) 1944.

5. Crane, J. J., and Rosenbloom, D.: *Treatment of Carcinoma of the Prostate: A Comparative Study*, to be published.

6. Herrold, R. D., in discussion on papers by Huggins, Scott and Hodges and Munger. J. Urol. 46:1016, 1941. Kahle, P. J.; Ogden, H. D., Jr., and Getzoff, P. L.: The Effect of Diethylstilbestrol and Diethylstilbestrol Dipropionate on Carcinoma of the Prostate Gland: I. Clinical Observations, *ibid.* 48:83, 1942. Schenken, J. R.; Burns, E. L., and Kahle, P. J.: Clinical and Pathological Effects of Diethylstilbestrol and Diethylstilbestrol Dipropionate on Carcinoma of the Prostate Gland: II. Cytologic Changes Following Treatment, *ibid.* 48:59, 1942. Kearns, W. M.: Treatment of Carcinoma of the Prostate with Estrogens, Wisconsin M. J. 41:575, 1942. Dean, A. L.; Woodward, H. Q., and Twombly, G. H.: The Endocrine Treatment of Cancer of the Prostate, J. Urol. 49:108, 1943.

SURGICAL REMOVAL OF CANCER OF
THE PROSTATE GLAND

THE RADICAL OPERATION

J. A. CAMPBELL COLSTON, M.D.
BALTIMORE

For the study of the ultimate results of any surgical procedure a thorough knowledge of the disease for which the operation is performed is essential, especially the course of the particular disease when uninfluenced by treatment. In any pathologic process there are numerous variables encountered, and in no type of disease is this so true as in cancer. Great variations occur in the rapidity of growth of the original neoplasm as the result of differences in the biologic activity of the individual cells as well as their tendency to invade the lymphatics or the blood stream. It is obvious, therefore, that only by a detailed study of long series of cases can a true picture of the disease be obtained, so that when a diagnosis of this particular disease has once been made the physician is able to prognosticate with a reasonable degree of accuracy the course which the disease will follow.

In carcinoma of the prostate great differences in the progress of individual cases have long been known. On the one hand there occur cases in which growth of the malignant cells is extremely rapid, with no apparent inhibition from the tissues of the host, so that invasion of the lymphatics occurs early and death may result from generalized carcinomatosis in the course of a few months. On the other hand there are the numerous cases recorded which have been observed over periods of ten years or even more with only minimal extension of the disease, but these instances are exceptions at opposite poles of the whole picture, and somewhere between them can be plotted the course of the vast majority of the cases of carcinoma of the prostate.

The invaluable studies of Bumpus¹ on the large series of cases which were available to him have given us a very clear understanding of the course which the usual case of cancer of the prostate may be expected to follow. He found in his series of untreated cases that the average duration of life from the onset of the first symptoms was approximately thirty-one months. When metastasis was found at the time of the first examination 66 per cent of the patients died within nine months, and when metastasis was not found the average length of survival was one year. Hager and Hoffmann,² in a study of another long series of patients, found that 47 per cent died within a year after the diagnosis was made. By careful studies such as these we are now able to predict with considerable accuracy what may be expected in the prognosis of the usual case of cancer of the prostate, with due reservations for the exceptional ones.

Of greatest importance in the study of any disease is a thorough knowledge of its pathologic anatomy. This aspect of carcinoma of the prostate has been

exhaustively examined, and the work of Rich,³ Moore⁴ and many others has resulted in a very clear understanding of the disease. The majority of workers in this field are in agreement that the disease begins in the posterior lobe in over 75 per cent of cases, that it invades the remaining portions of the gland slowly, and that its extension through the capsule is prevented by the two tough layers of Denonvilliers' fascia which are devoid of lymphatics. By gradual and usually slow progress the bases of the seminal vesicles are invaded and finally the perineural lymphatics become involved, which ultimately results in metastasis to the regional lymph glands and then to bones, particularly those of the pelvis and the lumbar vertebrae. Therefore in every case of cancer of the prostate there is a stage in the progress of the disease in which complete surgical excision of the entire neoplastic process is practicable before extension through the capsule or into other nearby structures has occurred. It was on the basis of this sound and irrefutable reasoning that Young⁵ devised the technic of his radical perineal prostatectomy.

With a knowledge of the pathologic anatomy of the disease, it is obvious that symptoms of urinary obstruction will not occur in the early stages unless a coincident benign hyperplasia is present. Thus it is apparent that the diagnosis of carcinoma of the prostate at a time when complete surgical excision of the entire disease is feasible must be made by careful rectal examination, during which evidences of nodules or areas of localized, stony hard induration are encountered.

The clinical criteria for cases in which complete removal of the disease is surgically possible have been previously discussed, but a repetition at this time would seem appropriate. 1. The neoplasm, on rectal palpation, must not extend through the capsule of the gland, into the membranous urethra or beyond the bases of the seminal vesicles, and the gland must be freely movable because fixation indicates the spread of the disease into the periprostatic tissues. 2. Evidences of metastasis must be excluded by careful physical examination, and particularly by x-ray studies. The acid phosphatase determinations should be within normal limits, although in the absence of x-ray evidence of bone metastasis an elevation of acid phosphatase seldom if ever will be encountered. 3. The patient should be a good surgical risk and have a good life expectancy. It is questionable whether the operation should be performed on patients in the eighth or ninth decades of life. It is a well known fact that the mortality of any surgical procedure increases with age, and the many statistics which have been published on various operative procedures for the relief of benign prostatic hypertrophy amply substantiates this point. Also it is well known that in older persons cancer of the prostate, generally speaking, progresses more slowly, probably because of the diminished androgen stimulation which occurs in the later decades. The question of age, however, can never be a hard and fast rule because individual patients present so many variations. The appraisal of the physical condition of the patient and, in a general way, his ability

From the Brady Urological Institute of the Johns Hopkins Hospital. Read in the symposium on "The Treatment of Cancer of the Prostate Gland" before the Section on Urology at the Ninety Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1 Bumpus, H. C., Jr. Carcinoma of the Prostate. *A Clinical Study*, Surg., Gynec. & Obst. 32: 31-43 (Jan.) 1921, Carcinoma of the Prostate. *Clinical Study of 1,000 Cases*, ibid. 43: 150-155 (Aug.) 1926.

2 Hager, B. H., and Hoffmann, E. F.: Statistical Data on 396 Cases of Carcinoma of the Prostate Observed at the Los Angeles General Hospital from Jan. 1, 1923 to Jan. 1, 1936, *J. Urol.* 37: 180-185 (Jan.) 1937.

3 Rich, A. R. On the Frequency of Occurrence of Oment Carcinoma of the Prostate, *J. Urol.* 33: 215-223 (March) 1935.

4 Moore, R. A. The Morphology of Small Prostatic Carcinoma, *J. Urol.* 33: 224-234 (March) 1935.

5 Young, H. H. The Early Diagnosis and Radical Cure of Carcinoma of the Prostate, Being a Study of 40 Cases and Presentation of a Radical Operation Which Was Carried Out in Four Cases, *Bull. Johns Hopkins Hosp.* 16: 115-121 (Oct.) 1905, The Radical Cure of Cancer of the Prostate, *Surg., Gynec. & Obst.* 64: 472-482 (Feb. 15) 1937, Surgery in Cancer of the Prostate, *Correspondence*, *J. A. M. A.* 119: 669 (June 20) 1942.

an untreated series of early cases which might be compared with the observations which we have recorded. However, Thompson⁹ has reported a series of 337 cases treated by transurethral resection prior to 1937. He records a five year survival rate of 14.1 per cent, with several patients living eight or nine years. It must be emphasized that these statistics can in no sense be compared with those herein presented, for in a large majority of Thompson's cases the disease must have been far too extensive for complete radical excision.

The postoperative course of patients who survived the radical operation, regardless of whether the disease recurred, is in striking contrast to series of cases in which purely palliative procedures were employed to relieve the obstruction. Thompson⁹ reports that urinary obstruction recurred and two or more operations were necessary in 25 per cent of his cases. The high incidence of persistent infection with frequency, urgency and hematuria which is encountered following transurethral resection for malignant disease is familiar to all urologists. G. G. Smith¹⁰ has recorded his impression that the postoperative course of patients subjected to the radical operation is far better than patients treated by palliative procedures in that recurrence of obstruction rarely occurs, and for this reason he has advocated the radical operation in cases in which the prognosis for complete removal of the neoplasm is poor or even hopeless. He feels that the removal of the main mass of malignant disease protects the patient against later recurrence of obstruction and that portions of cancer which it may not be possible to remove remain in areas high up between the bladder and the rectum, where they usually grow very slowly and cause no interference with urinary function. The present study entirely substantiates this point of view. In 4 cases urinary obstruction is recorded as having occurred at varying intervals of time after the operation; this was controlled by simple dilation of a stricture at the operative site. One patient (the first patient operated on, in 1904) died nine months after operation from urinary obstruction, perineal abscess and sepsis, probably resulting from a stricture. Another patient died from instrumental rupture of the bladder following attempts to dilate an obstruction which occurred as a result of recurrence of malignant disease at the neck of the bladder. In another case a transurethral resection was necessary to relieve urinary obstruction caused by recurrence of the cancer. Thus in only 2 cases in this series did urinary obstruction recur to such a degree that operative measures were necessary.

In the foregoing the salient points of our knowledge concerning the origin and extension of carcinoma of the prostate have been reviewed, and the fact that the disease in its earliest stages is readily amenable to complete surgical eradication has been stressed. The importance of early diagnosis, as in all other types of malignant disease, is self evident. The criteria for cases suitable for the radical operation have been presented, and it has been shown that with careful examination and education of the profession it is possible to find among all patients admitted to the hospital for cancer of the prostate 20 per cent in whom the radical operation

can be carried out with a reasonable prospect of cure. The all too prevalent tendency to wait for the development of obstructive symptoms in early cases of the disease has been condemned, because by this policy of watchful waiting the possibility of a permanent cure is denied these patients. The important question of endocrine therapy has not been discussed because all the patients who are included in this study were operated on before Huggins¹¹ presented his fundamental work on this subject.

From 1904, when Young carried out his first radical perineal prostatectomy for carcinoma, until 1939, eighty-seven similar operations have been performed in the Brady Urological Institute with a mortality of 5.8 per cent—a figure which certainly compares favorably with operations undertaken in other deep parts of the body designed for the total eradication of malignant disease. Of the patients who left the hospital following operation there was a five year survival rate of approximately 50 per cent, a figure about the same as has been previously reported by Young, Lewis⁶ and Smith.¹⁰ If the patients who died within a period of five years after operation without evidence of recurrence or metastasis are eliminated, the five year survival rate is 56.5 per cent.

Cancer of the prostate is a very common disease and can be recognized in its early stages by rectal palpation. When the diagnosis has been made before the neoplasm has advanced too far, total extirpation by radical surgery is possible.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. HERBST, DRS. MOORE, WATTENBERG AND ROSE, DRS. EMMETT AND GREENE, DRS. BUMPUS, MASSEY AND NATION AND DR. COLSTON

DR. ROBERT H. CUMMINGS, Ann Arbor, Mich.: Alrcady one begins to detect a trend to utilize castration in cases of advanced carcinoma of the prostate in which symptoms of metastasis are present. It is in this type of case that the subjective response is so brilliant. Relief of pain appearing immediately after bilateral orchiectomy in 88 per cent of our series of cases in which that symptom was present prior to castration is a somewhat higher percentage than that reported today. The objective changes following institution of this form of endocrine therapy in these same advanced cases is likewise often brilliant. Definite regressive changes in the primary neoplasm occurred in 32 per cent of Dr. Emmett's cases and in 34 per cent of Dr. Nesbit's and mine. Some degree of regression in size of the prostate was thought to have occurred in 66 per cent of our cases. Seventy-one per cent of Dr. Emmett's patients experienced definite evidence of improved urinary function following bilateral orchiectomy alone. In our series 9 of 14 patients who had no operation for the relief of prostatic obstruction experienced more normal urination following castration. In the group of patients with metastases, 78 per cent of Dr. Emmett's and 84 per cent of our patients survived the nine month period shown by Dr. Bumpus in a similar group of patients in whom endocrine therapy was not used, to be associated with only 33 per cent survival over an equal period of time. These few illustrative comparisons seem to us too to demonstrate the efficacy of castration when prostatic cancer has metastasized. This therapeutic procedure has been followed by an average remission of carcinogenic activity for 11.4 months in delayed failure cases. The fact that metastases occurred in 35 per cent of Dr. Emmett's cases in which none were detected prior to castration, together with the fact that 15 per cent of these patients died, suggests that this procedure does not constitute prophylaxis against extension of this neoplasm. In our experience 18.8 per cent developed metastases and 12.5 per cent died

9. Thompson, G. J.: "Transurethral Resection of Malignant Lesions of the Prostate Gland," J. A. M. A. 109: 1141 (April 1942).
10. Smith, G. G.: Total Prostatectomy, J. Urol. 35: 610-617 (June) 1936.
M. J. 44: 1391-1401 (Aug.) 1941; Surgery 101: 100-101 (April 25) 1942.
Correspondence, J. A. M. A. 118: 1514 (April 25) 1942.

11. Huggins, C.: The Treatment of Cancer of the Prostate, Canad. M. A. J. 50: 301-307 (April) 1944; Effect of Orchiectomy and Irradiation on Cancer of the Prostate, Ann. Surg. 115: 1192-1200 (June) 1942.

not less than twenty-one months after bilateral orchiectomy. Now we are at present using endocrine therapy in an effort to prevent extension, feeling that to do so voids our hand of trump cards to play if and when the patient requires relief from his suffering.

DR WAITER M. KEARS, Milwaukee. The papers of Dr Herbst and Drs Bumpus, Masscy and Nation demonstrate that the salutary effects of castration and of estrogens are less enduring than had been hoped for previously. Evidence points to the generalization that, if one method fails, substitution or combination with the other method will also fail. Not one castration has been carried out in my series of 78 patients because it seemed desirable to attain as large a number as possible, employing a single method, in order to reach a proper appraisal of that method. Simple estrogenic treatment will gain in favor, because all of the attainable benefits of castration minus some of its undesirable side effects are obtainable by the judicious use of the true hormone estradiol given to each individual patient by the most effective route. The changes produced by estrogens, which so abruptly alter the blood picture and clinical course of the disease are unquestionable evidence of their profound influence. Of 42 private patients who have been followed, approximately 60 per cent have been definitely benefited for periods exceeding six months. During the past year 3 patients who had been greatly benefited and were apparently stabilized under treatment with estradiol lost ground in spite of increased dosage and died. Fifteen patients presented themselves with definite indications for surgical intervention because of urinary obstruction. Through the prompt application of estrogenic therapy, urinary antiseptics and the use of continuous or intermittent catheterization, they have obtained improvement in general health, shrinkage in the prostate and ability to empty the bladder with little or no residual urine. Of these 15 patients, 4 have died, 2 of carcinoma and 2 of intercurrent disease. In no instance did significant amounts of urinary retention recur. The blood sedimentation rate as an aid in diagnosis and an indicator of the progress of the disease has proved very helpful. Approximately 85 per cent of the patients will show a deviation from normal, and this gives it a much wider range of usefulness than estimations of the blood phosphatase levels. My preference for nonsurgical treatment is based on several considerations. From the standpoint of economy, the evidence is overwhelmingly in favor of the nonoperative treatment. The hospital expense for the average patient would purchase a supply of estradiol sufficient to last two years. The operative fee no doubt would purchase a number of added years' supply carrying well beyond the life expectancy of men in this age group. It is not unlikely that estrogens actually bring about more thorough emasculation than castration. The estrogen, through anterior pituitary gland depression, not only suppresses testicular function, causing shrinkage of the testicle and prostate and absolute impotence, but also possibly depresses the andromimetic function (or testicle imitating function) of the adrenal cortex. Over the course of more than three years, several of my carcinomatous patients were maintained in good health with small dosage of estradiol 0.05 mg twice daily, without need of increments. It is my impression that an inadequate dosage may be ineffective but that when an adequate dose is established further increments are ineffective.

DR A. EYMER BELT, Los Angeles. The group of patients on whom I operated perineally seemed to do better than those operated on electrosurgically or by the punch operations, because the cauterized urethra and bladder neck after the punch operation were painful. These studies in castration and administration of diethylstilbestrol presented here reveal an inability on the part of the compilers of their data to come to definite conclusions as to the end result. Since the work was in its initial stages dependent on experimental work, let us turn again to the experimental work to see what correlated effects not discernible clinically are revealed in experimental animals. Castration produces a hypertrophy of the anterior pituitary, experimenters are uniform in telling us, with the formation of certain large clear cells always recognizable as due to castration. This

increase in pituitary size indirectly affects the thyroid, causing the thyroid to hypertrophy, and it is thought to cause a like effect on the adrenal. It is not definitely known that it does cause an effect on the adrenal. All of these glands—the adrenal, the pituitary and the thyroid—are prevented from undergoing these changes with the administration of androgens, either female or male. An example is the fact that the female estrogen prevents hot flashes in these men with castration. Therefore why not give the harmless and helpful female hormone at once and continuously after castration? It seems especially logical to follow this lead along the road of known physiologic effects rather than flounder in the maze of clinical data which so far cannot clearly be interpreted. In our clinic, if a radical operation is possible we perform it. If the operative results at the time of the radical operation show carcinoma remaining, an orchiectomy is done at once and diethylstilbestrol is given as soon as the patient is stable after operation and, if extensive carcinoma is encountered, orchiectomy plus diethylstilbestrol plus resection if there is obstruction of urine is carried out. In the 340 cases reported by J. J. Crane from the County Hospital, that method of following up with transurethral resection, castration and the administration of diethylstilbestrol gave those men their best results.

DR N. G. ALCOCK, Iowa City. Slides of a patient with bone metastasis due to carcinoma of the prostate demonstrated that practically all x-ray evidence of the metastases disappeared on the administration of diethylstilbestrol. A few others showed definite evidence of decrease in the metastatic lesions. I am confused and discouraged in the matter of treatment of cancer of the prostate. I am not optimistic in regard to the surgical treatment. A lesion to be amenable to surgical treatment must have certain characteristics. To be eliminated it must be so located that one can get far out around it. The aim of all treatment of cancer should be just one thing, and that is cure. The patient is either cured or he is not cured. A patient who has a recurrence of cancer ten years after treatment is no more cured than the one who has recurrence in six months. We all agree that the only cured cases of carcinoma of the prostate come about through surgery, but surgery is applicable to such a tremendously small percentage of the cases that it cannot be the answer to the whole problem. I doubt if the surgical possibilities will be extended further than they are at present either by greater perfection of technique or by earlier diagnosis of the condition. No one has ever claimed that either orchiectomy or diethylstilbestrol brings about a cure and in that respect we are all disappointed. I hope that with further study we may get something that will be the answer. Certainly orchiectomy and diethylstilbestrol at the present time do not make the answer, but they may lead to the answer. That, to me, is the bright ray of hope.

DR VICTOR LESPIGASSI, Chicago. Dr Herbst laid great emphasis on the high calorie diet and the high vitamin content of that diet. It is generally considered that that type of diet is protective against bacterial infection, but it is just the opposite for virus infections. What that has to do with the life of the cancer cell, of course, we don't know, but it is at least debatable or should provoke thought that we may not be doing our patient as much good by giving him a very high diet. If we give him just a sufficient diet, he might do just as well and his cancer might not be able to grow so fast. Of course, prostatic cancer is a specialistic cell that is dependent for its growth and its activity to a large extent on the testicular androgens, and that is the factor on which our whole theory of female sex hormone therapy is based. Is there anything to be lost or to be gained by giving these patients some x-ray treatments along with these estrogenic tablet implants? I think there is. In my practice that is my method. I give these men courses of x-rays or courses of radium along with their estrogenic substances, and I feel that, at least to my finger these prostates don't grow as fast, are controlled and shrink up and do very well clinically. My longest survival on this situation is about three and one-half years. That man is apparently getting along about as well as a man 70 years old could. He has had that method of

treatment and no castration. He had a partial removal of the carcinoma surgically and has had since that time estrogens. He has had several courses of x-rays.

DR. HENRY SANGREI, Philadelphia: The adult prostate in its secretory stage has only two types of hormones—androgens and estrogens. Androgens in excess produce hyperplasia. Estrogen produces metaplasia. It causes a decrease in the size and a cessation of the tall columnar epithelial cells. In recent years the concept of the self-governing action of the cancer cells has become standardized. Many men consider that few or no outside influences control the growth of the cancer cell; that even when dependent on the catabolic effects of a starving host they will proliferate and develop. This general pattern does not hold true with respect to prostatic cancer in man, which is often dependent on androgen for its survival, androgen seriously disturbing the enzyme mosaic of the cancer cell.

DR. WILLIAM P. HERBST, Washington, D. C.: All of us are confused about this problem. The main reason for the confusion is the incidence of a large number of clinical courses which do not conform to what seem to be the basic principles. That, of course, is dependent on the fact that the human mechanism from a biochemical standpoint is most complex. Dr. Lespinasse brought up the question of the vitamins stimulating the malignant cells. From the small clinical experience that I have had it is my impression that even though the vitamins may stimulate the cancer cells the patient, as far as his sense of well-being, comfort and tongue are concerned, is definitely in a better situation. When we introduce into the body these various biochemical substances they do not necessarily have to remain as that biochemical entity, and, as a matter of fact, they do not, as proved by research. It is quite conceivable that estrogen may be transformed into androgen. I have had clinical cases which would suggest that as an explanation of the clinical course. We can administer large quantities of these substances, and urinary excretion tests do not run comparative to the amount injected. Dr. Lespinasse also mentioned the x-rays. Clinically, when estrogens are being administered and the patient is complaining of pain over the shoulder or over the back or over the hip, the roentgenologist is able to give comfort with a much smaller dose of x-rays than these patients have been accustomed to obtaining with radiation in like cases without the administration of the estrogen. The present status of acid phosphatase in the correlation of metastasis is one of those things that we can't understand. Clinically some of the patients with extensive metastases run courses completely comparable to the acid phosphatase levels; some of them do not. Some of the worst cases instead of having elevated phosphatase levels have levels down as low as two points. That is one of the confusing things and that is what put us all in this mental confusion Dr. Alcock has described. The potential period of control is going to depend on the performance of castration and the subsequent administration of these various substances when symptoms of malignant progress indicate them. The further off we can put the administration of the estrogens after the performance of castration, the longer is going to be life expectancy and comfort.

DR. J. A. C. COLSTON, Baltimore: It has been generally agreed that there is a certain percentage of cases, perhaps a small percentage, that is suitable for radical surgery. Endocrine therapy is palliative and gives marvelous results in certain cases. Before the endocrine treatment was introduced by Dr. Huggins, I had rather definite ideas on the question of carcinoma of the prostate in that the radical operation could be done in some cases and that for the advanced cases palliation should be carried out by operation or x-rays for the purpose of preservation for as long a time as possible of as nearly normal urinary function as possible. The studies of Dr. Huggins have not modified that view. Certainly all of the men who have discussed the situation have noted definite regression from diethylstilbestrol. Dr. Brice Vallett in the *Delaware State Medical Journal* described a case of advanced carcinoma of the prostate with a frozen pelvis, in which orchiectomy was done, followed by tremendous regression of the growth; he then did a radical

operation, not perhaps in the hope of a complete cure. In the majority of cases of such extensive malignant disease there would probably be a recurrence of the disease. But I think this patient will probably do far better with this method of management. Recurrence may take place, but I think his life will be extended and the future made more comfortable. In regard to diethylstilbestrol, since the first of the year we have carried out diethylstilbestrol treatment on 4 patients who had a rather extensive carcinoma of the prostate but no extension into the vesicles; the whole gland was involved by malignant disease but no metastases were demonstrable. In these 4 cases there was a very definite regression and in all of these cases radical operation has been done since this time without any particular difficulty. I believe that diethylstilbestrol treatment should be tried in cases which appear a little unfavorable for the radical operation in the hope that regression will occur to such a degree that this operation can be carried out. I believe, therefore, that with selected endocrine therapy more and more cases will be suitable for complete radical extirpation.

CORRELATION OF THE PURITY OF PENICILLIN SODIUM

WITH INTRAMUSCULAR IRRITATION IN MAN

ROBERT P. HERWICK, M.D., PH.D.

HENRY WELCH, PH.D.

LAWRENCE E. PUTNAM, M.D.

AND

ARMAND M. GAMBOA, M.D.

WASHINGTON, D. C.

It has been reported¹ by both the Army and the Navy that certain lots of commercial penicillin sodium produce severe pain on intramuscular injection. In some cases repeated injections have been followed by the formation of sterile abscesses containing insoluble material with no antibacterial activity. In general the lots of penicillin causing the most severe reactions were produced by only one or two manufacturers. Occasionally, however, other manufacturers' lots resulted in mild to moderate irritation on intramuscular injection.

At the request of the Army and the Navy the present study was undertaken to determine the factors causing pain following intramuscular injection of penicillin. Two hundred and thirty individuals, most of them with sulfonamide resistant gonorrhea, were treated with penicillin sodium obtained from seventeen manufacturing sources.

In preliminary studies on 100 patients an attempt was made to correlate pain in patients following intramuscular injection with the reactions obtained following intradermal injection of the same material in man and in rabbits. In man the intramuscular injections consisted of single doses of from 10,000 to 25,000 units of penicillin and the intradermal injections were made with 1,000 units in a volume of 0.05 cc. of salt solution. Rabbits were injected intradermally with 2,000, 4,000, 6,000, 8,000 and 10,000 units contained in 0.5 cc. of distilled water. Using either vesiculation in man or edema and hemorrhage in rabbits as an index of irritation, it became evident that it was not possible to correlate these reactions with pain produced on intramuscular injection in man. Certain commercial prepa-

From the Food and Drug Administration, Federal Security Agency, and the Rapid Treatment Center, Gallinger Municipal Hospital.
1. Personal communications to the author.

rations produced vesiculation (primary irritation) on intradermal injection, while the same material on intramuscular injection gave variable pain responses. When 6,000 units or more of penicillin intradermally in rabbits produced definite edema and hemorrhage, such products would in most cases produce pain on intramuscular injection in man. Unfortunately, however, the converse of this did not follow; that is, when 6,000 units failed to cause edema and hemorrhage in the skin of rabbits, such preparations were not always painless on intramuscular injection.

In estimating pain in the next 100 patients several manufacturers' products of varying potencies were used and a control injection of 5 cc. of isotonic solution of sodium chloride was made in the corresponding area on the opposite side of the body. In this group of persons the injections of penicillin were made into the buttocks, triceps or deltoid. The drug was dissolved in isotonic solution of sodium chloride in a concentration of 5,000 units per cubic centimeter, and 5 cc. was given. Pain was reported as being either very slight, slight, moderate or pronounced and recorded as 1+, 2+, 3+ or 4+. If the pain radiated to the knee or elbow the valuation of the pain was raised one step, and if the pain persisted until the time of the next injection (three hours) it was also raised in value to the next higher grade; that is, a moderate pain which radiated down the extremity or which lasted three hours or longer was considered to be equivalent to a severe pain. One investigator was responsible for the interpretation of the degree of pain in all cases. The observations were made by the "blind test technic," i. e. the operator had no knowledge of the potency of the solution being tested.

The following results were obtained: Of 269 injections of saline solution 173 caused no pain, 56 caused 1+ pain, 34 caused 2+ pain, 6 caused 3+ pain and no injections caused 4+ pain. By contrast, of 269 injections of penicillin 51 caused no pain, 47 caused 1+ pain, 81 caused 2+ pain, 65 caused 3+ pain and 25 caused 4+ pain. From these data it was evident that penicillin produced more pain on intramuscular injection

manner than the data obtained could be subjected to statistical analysis.

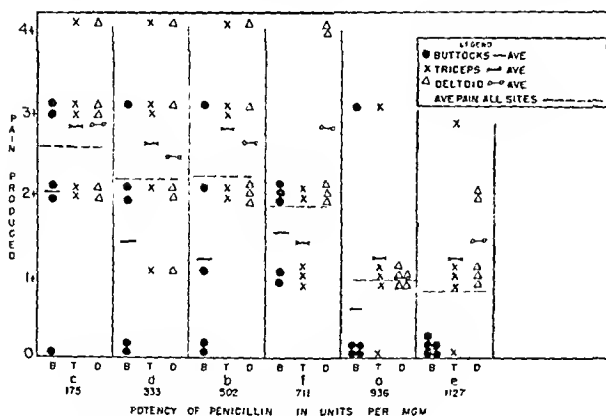
Each of the 30 patients received 75,000 units (25,000 units per injection) of penicillin sodium dissolved in isotonic solution of sodium chloride in a concentration of 5,000 units per cubic centimeter. Injections were

*Balanced Incomplete Block Type of Experimental Design
Showing Site of Injection* and Degree of Pain†*

Patient	Sample and Potency					
	a 936 Units per Mg.	b 502 Units per Mg.	c 175 Units per Mg.	d 333 Units per Mg.	e 1,127 Units per Mg.	f 711 Units per Mg.
Order No. 1						
1	B-0	T-3+	D-2+	....	....	....
2	B-3+	T-4+	....	D-3+	....	....
3	B-0	....	T-4+	....	D-2+	....
4	B-0	....	....	T-1+	....	D-2+
5	B-0	....	....	....	T-3+	D-4+
6	....	B-1+	T-2+	....	....	D-2+
7	....	B-0	....	T-2+	D-1+	....
8	....	B-3+	....	T-1+	D-2+	....
9	....	....	B-3+	T-3+	D-2+	....
10	....	....	B-3+	T-4+	....	D-4+
Order No. 2						
11	T-0	D-2+	B-0	....	....	....
12	T-1+	D-4+	....	B-0	....	....
13	T-1+	....	D-3+	....	B-0	....
14	T-3+	....	....	D-4+	....	B-2+
15	T-1+	....	....	....	D-1+	B-2+
16	....	T-3+	D-3+	....	....	B-2+
17	....	T-2+	....	D-3+	B-0	....
18	....	T-2+	....	....	D-1+	B-1+
19	....	....	T-3+	D-1+	B-0	....
20	....	....	T-3+	D-2+	....	B-1+
Order No. 3						
21	D-1+	B-0	T-2+	....	....	....
22	D-1+	B-2+	....	T-3+	....	....
23	D-1+	....	B-2+	....	T-1+	....
24	D-1+	....	....	B-3+	....	T-2+
25	D-1+	....	....	....	B-0	T-1+
26	....	D-2+	B-2+	....	....	T-1+
27	....	D-3+	....	B-2+	T-1+	....
28	....	D-2+	....	....	B-0	T-1+
29	....	....	D-2+	B-0	T-0	....
30	....	....	D-4+	B-2+	....	T-2+

* B = buttocks, T = triceps, D = deltoid.

† 0 = no pain, 1+ = very slight pain, 2+ = slight pain, 3+ = moderate pain, 4+ = severe pain.



Relationship of pain produced to site of injection and potency of penicillin sodium.

tion than isotonic solution of sodium chloride. In addition, it appeared that less pain resulted from injection into the buttocks than into the triceps or deltoid and that there was a correlation between the potency of penicillin and the pain produced. A statistical review of our data, however, could not be made. It was decided, therefore, to treat a group of 30 patients in such a

made into the buttocks, triceps and deltoid, and these were controlled by injections of saline solution contralaterally. The pain was estimated as described in the previous study, but in all cases in which the subject experienced pain following injection of saline solution the degree of pain was estimated and subtracted from the degree of pain produced by injection of penicillin and recorded as the difference. For example, pain estimated as 2+ from saline solution and 3+ from penicillin was recorded as 1+ pain. In a few cases the pain caused by injection of saline solution was equal to or greater than that produced by penicillin. In these cases the injection of penicillin was reported as having produced no pain.

The penicillin was of commercial manufacture and varied in potency from a low of 175 units per milligram to a high of 1,127 units per milligram. Six different concentration levels were used and, in choosing the material to pool, care was taken to obtain lots that were of approximately the same potency at all levels. The variation in potency of the samples of penicillin sodium and the number of manufacturers' products are shown in the accompanying table. Since there is some evidence that the depth of color of penicillin preparations is related to purity, the light transmission through a red filter of the pooled samples was determined at each concentration level. As the potency of the penicillin solu-

tions increased, the transmission of light through these solutions also increased.

For statistical analysis of the data a balanced incomplete block type of experimental design² was used. This type of design was so arranged that although each patient was injected with only three of the six potency levels each potency occurs with every other potency the same number of times. For instance, as shown in the table, sample *a* is given to the same patient as sample *b* in 6 instances (patients 1, 2, 11, 12, 21 and 22). This design was for 10 patients only. However, in order to determine whether the order in which the injections were made affected the pain response, two additional groups of 10 patients each were included. In the first 10 patients the order of injections was buttocks, triceps and deltoid. For the second series of 10 patients the order was triceps, deltoid and buttocks, and for the third series deltoid, buttocks and triceps. In this way each potency was administered to 5 patients at each site of injection (as shown in the table). Thus a balance is obtained and the individual patient's responses do not give undue weight to any one factor.

In the chart the pain responses resulting from all injections are presented. With an increase in potency in units per milligram of penicillin there is a corresponding decrease in the pain produced. Of the three sites of injection, those made in the buttocks produced the least amount of pain. As shown by analysis of variance³ two factors were statistically significant in this clinical experiment, namely the site of injection and the potency of the penicillin.

CONCLUSIONS

1. There is a significant correlation between the purity (potency) of commercial penicillin sodium and irritation following intramuscular injection. With an increase in potency in units per milligram there is a corresponding decrease in the pain produced.
2. Intramuscular injection of penicillin produces a greater incidence and intensity of pain than isotonic solution of sodium chloride.
3. There is a correlation between the potency of penicillin and its light transmission.
4. Of the three sites of injection (buttocks, triceps and deltoid) the least amount of pain results from injection into the buttocks.
5. There is no significant correlation between the irritation produced by intradermal injection of penicillin in man or rabbits and that produced by intramuscular injection of this material.

2. Statistical Tables for Biological, Agricultural and Medical Research, by Fisher and Yates (Oliver and Boyd, 1943), table XVII.
3. Lila F. Knudsen, Food Division, Food and Drug Administration, supplied the statistical aspects of this study.

Cosmetic Dermatology.—Cosmetics was one of the earliest interests of civilized man, and when it comes to cosmetic dermatology the Ebers Papyrus gets into its full stride. The amount of space given to gray hair and baldness indicates not only that they are not afflictions peculiar to modern man but that there were the same frenzied and fruitless efforts to escape them that there are today. There were remedies to remove moles, to prevent or remove wrinkles, to make the face smooth, to improve its color, to beautify the skin. There is remedy after remedy to prevent or cure baldness and grayness and to dye the hair. There are even prescriptions for gray eyebrows.—Pusey, William Allen: *The History of Dermatology*, Springfield, Ill., Charles C Thomas, 1933.

THE ROLE OF INJUDICIOUS ENDOCRINE THERAPY

IN THE DELAYED DIAGNOSIS OF
UTERINE CANCER

LEWIS C. SCHEFFEY, Sc.D., M.D.

DAVID M. FARELL, M.D.

AND

GEORGE A. HAHN, M.D.

PHILADELPHIA

Our purpose in this presentation is to direct attention to a practice that is proving to be a serious factor in the delayed diagnosis of uterine cancer. We refer specifically to the indiscriminate use of endocrine therapy for the control of abnormal bleeding from the genital tract, when an organic cause for such hemorrhage has either been undiscovered or ignored. It is generally recognized, both by the profession at large and especially by workers in the field of pelvic malignancy, that delay in diagnosis is the most important explanation of the low curability rate of uterine cancer. Both patient and physician share in this responsibility.

Recognition that lack of knowledge, actual fear of learning the truth and associated reasons influence women to avoid medical consultation when abnormal vaginal bleeding occurs has led to intensive campaigns among the general public for cancer detection. The work of the Women's Field Army of the American Society for the Control of Cancer is an outstanding example of a sustained educational endeavor in cancer control, an effort that warrants the support and cooperation of all physicians. Any rational program that will influence women, not only to seek medical advice promptly when abnormalities appear, but to insist on an adequate pelvic examination as part of a routine, periodic check-up, should be furthered. Dr. Catharine Macfarlane and her group have shown today what can be done in this respect.

What of the physician's responsibility? Granted that in a very small minority of patients cancer of the uterus may exist without causing any untoward symptoms whatever, clinical experience and statistics prove that in the vast majority of instances abnormal bleeding from the genital tract is the commonest and most frequent symptom of the disease. Leukorrheal discharge, unless blood stained, is of much less significance, for vaginal discharge alone most often results from benign causes. Pelvic pain when associated with cancer unfortunately means a definite advance of the disease. Apart from this interpretation pelvic pain per se usually brings the patient to us for advice, and this provides an opportunity for careful examination, in the course of which a suspected or early lesion might be observed more promptly than would otherwise be the case.

Clinically, certain distinctions must be borne in mind with respect to the location of uterine cancer. Cervical cancer may occur at any time during the reproductive period, although the majority of patients afflicted are in the menopausal or postmenopausal epochs. Twenty-seven per cent of the patients observed in the Department of Gynecology of the Jefferson Medical College Hospital have been women under 40 years of age when first seen.¹ Friability of the tissue is characteristic of

From the Department of Gynecology, Jefferson Medical College Hospital.
Read before the Section on Obstetrics and Gynecology, at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

1. Scheffey, L. C.: Experiences in the Treatment of Carcinoma of the Cervix Uteri, *Radiology* 40: 436 (May) 1943.

malignant change, but biopsy is always indicated when abnormal bleeding is associated with pronounced hypertrophy, eversion and endocervicitis. Helpful diagnostic adjuncts comprise the use of the Hinselmann colposcope, the Schiller test and the stained vaginal smear method of Papanicolaou, more recently emphasized by Meigs and others. Biopsy, however, must be depended on finally for certainty of diagnosis.

On the other hand, fundal cancer is usually manifested primarily by postmenopausal bleeding. This has been true of 79 per cent of such patients seen at Jefferson. The remaining 21 per cent were over 40 years of age, however, and had not yet ceased menstruating when the diagnosis was made. Only 1 patient seen was under 40.² In this condition, curettage is essential to establish an accurate diagnosis and to determine proper treatment. Accompanying fibromyomas of the uterus tend to confuse the diagnosis of cancer in the premenopausal group, and this may result in inadequate treatment if preliminary curettage is omitted, either by performing incomplete surgery or by administering insufficient radiation therapy for a supposedly benign condition.

In support of the recognized prevalence of organic causes for abnormal uterine bleeding, one may also cite the findings of Mussey and Wilson.³ They reviewed the records of 200 patients who registered at the Mayo Clinic between July and September 1937 because of this symptom, finding 80 cases (40 per cent) of uterine fibromyomas and 27 cases (13 per cent) of cancer of the uterus.

Abnormal bleeding then, next to the ideal periodic pelvic examination, is the one incident that may enable the inquiring physician to confirm or disprove the presence of uterine cancer. This symptom, properly evaluated and managed, represents an ideal opportunity for prompt action; it is an opportunity that does not knock at the diagnostic door again. No diagnosis is easier to make, no treatment easier to initiate. The physician to whom the bleeding patient first comes for advice is the one on whom the primary responsibility rests for proper management.

It is unfortunately true that only too often the histories of uterine cancer patients show glaring errors of omission or commission in their primary management. Pelvic examination has often been omitted entirely or inadequately performed. Sometimes postponement has been suggested "until the bleeding stops." Patients have even been told not to worry—that the condition is one due merely to "change of life"—and that an examination can be made "later on." Of a score of patients coming into our clinic because of abnormal bleeding, the records show that 15 of them had received oral medication without examination, while 5 had been given either "electrical treatments" or cauterizations or simply told to use a vaginal douche. Biopsy, curettage or reference to a gynecologist or clinic was never even mentioned. Facts like these are not new; they are well known to the profession at large.

In recent years a new hazard has gradually become evident. The current popularity and ease of administration of glandular preparations has resulted in their indiscriminate and injudicious use in an attempt to

control abnormal uterine bleeding. Rapid advances have been made in the preparation and variety of potent endocrine products, both natural and synthetic in character. The use of such products should be based on a sound knowledge of their respective physiologic properties. Adherence to scientific principles, accompanied by honesty of purpose and fineness of judgment, is absolutely essential if good instead of harm is to result from their use.

In no sense do we wish to disparage the possible benefits of carefully controlled endocrine medication. It is quite permissible to attempt to manage the functional bleeding of adolescence and the early reproductive period with endocrine therapy, including thyroid, together with adequate general measures, provided a careful physical survey of these younger women, including pelvic examination, has eliminated organic disease and that logical consideration has likewise been given to the physiologic reasons for using this or that endocrine preparation. Even so, the possibility that such therapy may disturb the delicate endocrine balance of the individual should always be borne in mind.

When abnormal bleeding is present during the late reproductive, menopausal or postmenopausal periods, there is much less justification for prolonged and experimental endocrine therapy. Well recognized radiologic and surgical measures are available in such cases, not only for the relief of organic pelvic disease, but even for the correction of proved functional bleeding—measures that are surer and far less time consuming than prolonged and often indecisive endocrine therapy.

In too many instances, by ascribing abnormal bleeding to purely functional causes, and without thorough investigation or even pelvic examination, endocrine preparations of various sorts are increasingly being administered to "cure" disorders that are really organic. Robert T. Frank, dean of gynecologic endocrinologists, in a comprehensive review relating to advances in endocrine therapy, has commented particularly on errors of this sort.⁴ Tragically enough, cancer has frequently been found to be the real cause of the hemorrhage. When the cause has eventually been discovered to be due to a benign lesion, the situation may not yet be beyond effective control; with cancer at fault, the outlook is often hopeless because of such procrastination.

These observations are not peculiar to us. They have been noted by others and warnings such as these are being sounded more and more frequently in gynecologic presentations. To support this thesis and to emphasize our personal experience in these instances we will report in brief abstract the histories of 7 such patients who were observed in the gynecologic service of the Jefferson Medical College Hospital Philadelphia:

CASE 1.—F. S., a quintipara aged 62, admitted April 19, 1940 because of profuse bloody vaginal discharge and itching of six months' duration, had had the menopause and cessation of periods twenty years before. Thyroidectomy had been done two years prior to admission. No pelvic examination had been made. Endocrine injections had been administered by the family physician for functional bleeding over a period of six months, when the patient sought hospital advice because of dissatisfaction with the management of her case. Examination revealed carcinoma of the cervix, group 3 (Schmitz). The histologic diagnosis was squamous cell carcinoma of the cervix, with a high grade of malignancy. External irradiation was done prior to local radium application. The patient recovered and has been living and well for four years without further symptoms.

2. Scheffey, L. C.; Thudium, W. J., and Farrell, D. M.: Further Experience in the Management and Treatment of Carcinoma of the Fundus, with Five Year End Results in 75 Patients, *Am. J. Obst. & Gynec.* 46:786 (Dec.) 1943.

3. Mussey, R. D., and Wilson, T. F.: Abnormal Uterine Bleeding After Middle Age, *J. Michigan M. Soc.* 43:129 (Feb.) 1944.

4. Frank, R. T.: Advances in Endocrine Therapy, *Am. J. Obst. & Gynec.* 47:561 (April) 1944.

CASE 2.—F. M., a sextipara aged 50, admitted June 21, 1940 because of vaginal bleeding of two years' duration, had been given endocrine injections by the family physician for six months prior to admission, without pelvic examination, in the belief that the symptom was "due to the menopause." Pelvic examination at this late date revealed an extensive cervical growth and the patient was sent to the hospital. Examination revealed carcinoma of the cervix, group 4 (Schmitz). The histologic diagnosis was squamous cell carcinoma of the cervix with intermediate grade of malignancy. External irradiation was done prior to local radium application. The patient died of carcinoma one year later.

CASE 3.—M. V., a secundipara aged 48, admitted Dec. 6, 1941 because of vaginal bleeding of six months' duration, had had the menopause and cessation of periods one year before, when she received a series of endocrine injections simply "for the menopause" and without internal examination. Six months prior to admission vaginal bleeding began to occur at irregular intervals. Without pelvic examination, endocrine injections were again administered, and slight bleeding was noted almost every day. Finally a profuse vaginal hemorrhage took place and soon afterward the patient was sent to the hospital. Examination disclosed carcinoma of the cervix, group 3 (Schmitz). The histologic diagnosis was squamous cell carcinoma of the cervix, with an intermediate grade of malignancy. External irradiation was administered prior to local radium application. The patient died of carcinoma two years later.

CASE 4.—L. M., a secundipara aged 65, admitted Jan. 31, 1942 because of continued vaginal bleeding following both radium therapy and external irradiation received in other hospitals for postmenopausal bleeding, the cause of which had never been diagnosed histologically, had had the menopause fifteen years before that. With the primary appearance of postmenopausal bleeding, two years prior to the radium application and x-ray therapy, and without pelvic examination, endocrine therapy had been administered over a considerable period of time. When the patient was finally admitted to Jefferson Hospital, the histologic diagnosis of well advanced adenocarcinoma of the fundus, with an intermediate grade of malignancy, was made. External irradiation was administered, followed by local radium application. The patient died of carcinoma one year later.

CASE 5.—A. S., a septipara aged 50, admitted July 22, 1942 because of continuous vaginal bleeding of seven months' duration with resultant profound anemia, had been regarded as a functional problem off and on for the previous ten years because of conspicuous obesity and intermittent periods of irregular uterine bleeding. During this time she had received numerous courses of endocrine injections as well as thyroid. Since a diagnostic curettage five years before had shown cystic hyperplasia, the patient continued to be regarded as a functional bleeder until the resultant hemorrhagic state necessitated hospitalization. Examination revealed an intact cervix, but the fundus was symmetrically enlarged. Diagnostic curettage and microscopic study revealed adenocarcinoma of the fundus of low grade malignancy, and 4,800 mg. hours of radium was administered following the curettage. Because of extreme obesity, operation subsequent to the radium application was contraindicated and a second radium application of 4,800 mg. hours was carried out again four months later. The second curettage revealed residual adenocarcinoma of the endometrium with advanced degenerative change, but there has been no further bleeding to date. Recovery ensued. The patient has been living and well for two years.

CASE 6.—M. L., a primipara aged 44, admitted July 3, 1943 because of irregular vaginal bleeding of three years' duration, had been given endocrine injections for "menopausal bleeding," without pelvic examination, for six months prior to admission by the family physician. Failing to improve, she was admitted to a hospital in her vicinity, where external irradiation was administered for carcinoma of the cervix, clinical group unrecorded. The patient was then referred to Jefferson Hospital for radium therapy. Examination revealed a lobulated but contracted vaginal vault with localized necrotic areas and

parametrial fixation, group 5 (Schmitz). The histologic diagnosis was squamous cell carcinoma of the cervix, of low grade malignancy. Radium was applied locally. The patient recovered and has been well for one year.

CASE 7.—P. J., a primipara aged 40, admitted March 14, 1944 because of profuse vaginal hemorrhage, had irregular vaginal bleeding for seven months. Without pelvic examination, a protracted course of endocrine injections was given by the family physician over a period of six months. When an exsanguinating hemorrhage finally occurred, the patient was seen in consultation with other physicians, finally examined and sent to the hospital. Examination revealed carcinoma of the cervix, group 3 (Schmitz). The histologic diagnosis was adenocarcinoma of the cervix. External irradiation was administered prior to local radium application. Recovery is undetermined at this date.

It has been substantiated by the foregoing case reports that ill advised endocrine therapy, without thorough clinical study, is an important factor in the delayed diagnosis of uterine cancer. That the same inattention to accurate diagnosis may result in the postponement of adequate measures for benign conditions is well illustrated by the following reports of 2 patients recently admitted to the gynecologic service of the Jefferson Medical College Hospital. Such instances are not infrequent, but more cases need not be reviewed to clarify this particular point.

CASE 8.—L. B., a tertipara aged 39, admitted Jan. 16, 1944 because of menorrhagia and metrorrhagia of nearly two years' duration, during which time she had been receiving endocrine injections from her physician for control of the bleeding without any preliminary or subsequent pelvic examination, finally became dissatisfied and consulted another physician, who immediately diagnosed fibromyomas of the uterus, together with papillary erosion of a lacerated, hypertrophied cervix. The patient was referred to the hospital and the diagnosis was confirmed. A complete abdominal hysterectomy was performed, with conservation of both adnexa. The histologic diagnosis was multiple fibromyomas, subserous and submucous; papillary erosion of the cervix; endometriosis interna. The patient recovered.

CASE 9.—M. G., a secundipara aged 48, admitted March 7, 1944 because of menorrhagia, metrorrhagia and pelvic discomfort of two months' duration, had been given endocrine injections of various types regularly during that time by a physician's office nurse in a distant city without complete pelvic examination. When she returned to her home the patient's family physician promptly examined her and detected fibromyomas of the uterus associated with endocervicitis, hypertrophy and cervical polypi, which diagnosis was confirmed on admission to the hospital. A complete abdominal hysterectomy with bilateral salpingo-oophorectomy and lysis of adhesions from a previous operation resulted in recovery. The histologic diagnosis was multiple fibromyomas, subserous, intramural and submucous, with hyaline change; cervical erosion; endometriosis interna; follicular cystosis of the left ovary.

Attention should also be called to the uterine bleeding that may result from excessive and continued dosage with estrogenic substances primarily prescribed to combat the vasomotor disturbances incident to cessation of periods and the menopause. This type of bleeding is bound to be confusing, for the question immediately arises as to whether this substitution therapy is entirely responsible for the postmenopausal bleeding as an estrogenic "withdrawal" phenomenon or whether it is due to organic pelvic disease, particularly fundal cancer. Only a diagnostic curettage can settle definitely the problem thus created. Furthermore, the possibility of a carcinogenic effect on the postmenopausal genitalia or breast, particularly where susceptibility or a familial history of cancer exists, and entirely apart from a preexisting cancer, must also be taken into consideration. For the same reason it would

seem inadvisable to administer endocrine therapy for the control of vasomotor symptoms occurring after the use of radium or x-rays for either benign or malignant pelvic conditions.

As a matter of fact, many women exhibit little or no disturbance during the menopausal epoch. Quite a number of those who do complain of disagreeable vasomotor symptoms may be made relatively comfortable by a rational explanation of the physiologic changes responsible for their annoyance, plus appropriate sedation and the reassurance of a negative pelvic examination. Too often, however, the menopausal patient is led to believe that courses of "injections" continued over a long period of time are essential to her health and happiness. She may even be told to expect disagreeable phenomena with the advent of the "change of life" and such suggestions may come, not only from her intimates, but from her medical adviser as well.

When, after thoughtful consideration, estrogenic therapy is believed to be essential for the control of distressing menopausal phenomena that do not yield to the measures mentioned, it should be administered in the lowest possible dosage. Furthermore, "rest periods" of a week or so should be prescribed between courses of therapy, as advocated by Hepp⁵ and others. Whenever so-called "withdrawal bleeding" occurs, its possible significance should be promptly appreciated.

CONCLUSIONS

1. Endocrine therapy, as shown clearly in this presentation, instituted to control abnormal uterine bleeding, without preliminary examination to exclude organic pelvic disease, has resulted in the delayed diagnosis of uterine cancer in far too many instances.

2. A similar conclusion pertains to the delayed diagnosis of benign pelvic conditions amenable to surgical or radiation therapy.

3. The profession at large should be reminded constantly of the possible dangers and diagnostic confusion that may result from ill advised and injudicious endocrine therapy employed for the control of gynecologic disorders. The importance of a comprehensive general and pelvic examination to exclude organic lesions before instituting such therapy cannot be stressed too often or too forcefully.

255 South Seventeenth Street.

ABSTRACT OF DISCUSSION

DR. EDWARD D. ALLEN, Chicago: This paper reemphasizes the frequent lack of early diagnosis of bleeding from the genital tract of women. An appraisal of many of the extensive studies dealing with the treatment of carcinoma will reveal that in spite of the intensive educational program of the public and the medical profession for the control of cancer there has been only a slight increase in the number of early carcinomas found over that of ten years ago. A tidal wave of endocrine therapy is sweeping the country just as the vitamins have done. I am expecting daily to hear a radio announcer say "Get estrogens at your neighborhood drug store, they are great for your hot flashes or any other ills peculiar to the female sex." A large number of women of all ages have had hormones prescribed for them, without a complete physical examination, for everything from skin diseases inward. I do not believe we shall progress in the control of cancer of the female genital tract until we teach patients to demand pelvic examinations as a part of their routine check-up and to insist that doctors include it regularly in their complete physical examinations. To do this adequately we must start back in the mother-daughter contacts. One month ago I

treated with radium an extensive carcinoma of the cervix in a maiden lady who had been given estrogen for one year for the menopause before she was asked by her doctor for permission to make a vaginal examination. Our department has tried to enforce a rule to the effect that no patient is to receive hormones without a previous adequate pelvic examination. Every one seems to feel that the treatment of the menopause is so simple now that it needs no special knowledge or training. We have impressed the profession and the public with the advantages of the treatment of the menopause without at the same time stressing its dangers and disadvantages. Thousands of women between the ages of 35 and 65 are receiving hormones for bleeding presumably due to the menopause. We have abetted the assumption that almost anything that happens to a woman between these ages may be attributed to the menopause and have often ourselves forgotten at times that the menopause signifies cessation of menstruation. The vast majority of patients similar to those that Dr. Scheffey has presented have been overlooked not by lack of diagnostic acumen on the doctor's part but by sheer inertia or hesitancy in making a pelvic examination.

DR. JOE VINCENT MEIGS, Boston: Nearly every patient one sees in the office with uterine bleeding near or at the menopause has at one time or another had "shots" or has taken "pink" pills. It is reasonable to expect that sometime a growth, perhaps a malignant growth, may result. Injudicious use of endocrine therapy is to be condemned. It is true that large doses of estrogen or synthetic estrogen will occasionally check abnormal bleeding. The renal problem is as to whether it is safe to use such powerful treatment before a diagnosis has been made and whether one can wait to watch the result of such treatment. The chances of stopping the bleeding in cancer patients is not great, but benign bleeding will almost certainly cease. The danger is the possibility of obscuring a malignant tumor, and lack of appreciation of such a possibility may be extremely serious. For these reasons estrogen or diethylstilbestrol should not be given to patients until the "bleeding" is thoroughly explained. In young people, in the attempt to stop ovulation as a diagnostic test, and for "hot flashes" or menopausal symptoms in the older age group, estrogen is of real value. In the older age group with bleeding, such treatment is fraught with danger and should not be used until a curettage has demonstrated the absence of cancer. An endometrial biopsy is not sufficient. This method of deciding whether or not cancer is present is not sound and may result in missed diagnoses; and a missed diagnosis may be fatal. I have had 2 patients who were given estrogen in the form of diethylstilbestrol who had uterine cancer, one of the endometrium and one of the cervix, and a great deal of time was lost before proper treatment could be instituted. The proper method of approach to vaginal bleeding is a complete study of blood disorders, vitamin deficiencies, sympathetic nervous system abnormalities, and in all patients over the age of 30 a diagnostic curettage with removal of as much endometrium as possible. Endometrial biopsy is not sufficient. Estrogen should be given only to those who have proved benign bleeding and to patients with definite menopausal symptoms without bleeding. Too many women are regarded as having menopausal symptoms from the age of 30 upward. Synthetic estrogen treatment is inexpensive and easy but, although it seems simple, should be considered as dangerous until proved otherwise.

DR. JAMES ALBERT CORSCADEN, New York: To the difficulties of diagnosis brought about by the injudicious use of estrogens should be added the possible etiologic factor which these substances may have. In the past year there have been several cases in which there was a close coincidence between the administration of large doses of estrogen and the carcinoma of the corpus which appeared a year or two later. In the cases of carcinoma of the uterus following many years after a radiotherapeutic menopause, uterine bleeding was the indication for treatment in all cases in the first instance, and there was a high incidence of cystic and glandular hyperplasia among those who subsequently developed carcinoma. These items suggest some relationship between estrogenic stimulation and the later development of carcinoma.

5. Hepp, J. A.: Menopausal Management: A Further Report on Diethylstilbestrol, *Pennsylvania M. J.* 47: 363 (Jan.) 1944.

DR. KARL H. MARTZLOFF, Portland, Ore.: Since the monograph of Papanicolaou and Traut and more recently the article by Dr. Joe Meigs, reference to the stained vaginal smear test for detecting carcinoma of the cervix uteri is being made repeatedly. The test is not designed to take the place of tissue removed for biopsy from the cervix with either the curet, the scalpel or the endothermy unit. It is designed primarily as an exploratory test to detect cancer provisionally where it may otherwise not be suspected. In the event that the stained smears arouse the suspicion of cancer, this must be verified by microscopic study of tissue properly obtained and prepared for micro-section. The test, in my estimation, has its limitations for these reasons: It requires one who knows how to stain these preparations. After the stained preparation is once prepared, the matter of interpretation arises. I do not believe that the average pathologist, unless he has been studying vaginal smears, is qualified to interpret a stained vaginal smear with the idea of making a reasonably correct presumptive diagnosis of cancer. Finally, the element of time is not inconsequential if these preparations are to be carefully scrutinized by one who is not in more or less constant practice with this technic. The foregoing considerations are mentioned so that a technic as valuable as this may prove to be will not cause disappointment merely because its purpose and field of usefulness are not appreciated.

DR. RICHARD W. TELINDE, Baltimore: Dr. Karnaky is one of the greatest advocates of diethylstilbestrol therapy. He has made a great many statements in the literature with which many of us do not agree. For instance, he said that bleeding fibroids can practically always be satisfactorily treated with diethylstilbestrol. He states that it is just a matter of getting the proper level of diethylstilbestrol. I think this is the place to thresh these things out.

DR. KARL JOHN KARNAKY, Houston, Texas: When I first discovered that diethylstilbestrol would stop uterine bleeding I did not think that some doctors would use diethylstilbestrol to stop uterine bleeding and not take a biopsy of the endometrium or even do a pelvic examination. I fully agree with Dr. Scheffey on this matter. Diethylstilbestrol in sufficient doses will stop uterine bleeding in a few hours. Previously there was nothing that could be taken by mouth that would stop dysfunctional uterine bleeding quickly. In such cases my associates and I give five 5 mg. to twenty 5 mg. tablets (25 to 100 mg.) now and 10 to 25 mg. every fifteen minutes until the bleeding stops and then 5 to 10 mg. every night for thirty to sixty nights by mouth. We have done thousands of laboratory tests on over 3,000 patients receiving diethylstilbestrol. In all the tests we have been unable to find any damage from diethylstilbestrol. Our latest work on uterine bleeding and diethylstilbestrol may be found in the December 1943 issue of the *Journal of Clinical Endocrinology*. In this paper I reported over 500 cases of dysfunctional uterine bleeding treated with diethylstilbestrol. I have devised a series of charts based on the theory that at a certain estrogenic level the woman menstruates or bleeds. Above this level, as during pregnancy and between menstrual flows, she is amenorrheic. During menstruation or uterine bleeding her estrogenic blood level is in the estrogenic bleeding level. Below this estrogenic level, as before puberty and after the menopause, she is amenorrheic. This is the basis for the use of diethylstilbestrol for uterine bleeding. By giving diethylstilbestrol one raises the estrogenic blood level out of the estrogenic bleeding level, and so the bleeding stops and the ovaries undergo temporary atrophy. I wish to emphasize the statement of the Council on Pharmacy and Chemistry of the American Medical Association that "estrogens are to be used to control the uterine bleeding until the cause can be found."

DR. U. J. SALMON, New York: To the list of instances in which injudicious endocrine therapy has been instrumental in delaying the diagnosis of uterine cancer, already discussed, I should like to add the danger of assuming that uterine bleeding which occurs during the course of estrogen therapy administered for the relief of menopausal symptoms is attributable to the estrogens alone, thus possibly overlooking a uterine cancer, and the danger of treating abnormal uterine bleeding with androgens without a preliminary diagnostic curettage. I have attempted to avert both these dangers by performing an endometrial biopsy in every case of bleeding which occurs during the course of

estrogen therapy, followed by a diagnostic curettage if the bleeding persisted, and also by performing an endometrial biopsy or curettage in every case of menorrhagia and metrorrhagia before instituting any form of endocrine therapy. In 1 instance, in this manner, an unsuspected corpus carcinoma was discovered in a patient who had developed bleeding following diethylstilbestrol therapy. Both the estrogens and the androgens are valuable therapeutic agents for properly selected cases. It is regrettable that their injudicious use has led to some tragic mistakes. However, we should not condemn endocrine therapy because of mistakes committed by the misguided or inexperienced. By drawing attention to these mistakes and to the methods of averting them the authors have rendered an invaluable service to both the profession and the public.

DR. LEWIS C. SCHEFFEY, Philadelphia: I am grateful to those of the section who have discussed this paper. The point we wanted to make is that, unless every doctor refuses to give endocrine therapy for abnormal uterine bleeding until examination has excluded organic pelvic disease, he has not done his duty, first to the patient, and second to the science and practice of medicine.

THE CONCENTRATION OF PENICILLIN IN VARIOUS BODY FLUIDS DURING PENICILLIN THERAPY

JEAN V. COOKE, M.D.

AND

DAVID GOLDRING, M.D.

ST. LOUIS

The absorption and distribution of penicillin in the various body fluids after parenteral injection and the duration of its survival in body fluids or cavities under normal and pathologic conditions are questions of considerable interest in penicillin therapy. Although some studies have been made in certain cases, there has apparently been no method for penicillin titer of such body fluids easily applicable to routine observations in clinical cases. In this paper we report the results of observations made on penicillin levels in the blood serum and other body fluids by the use of a relatively simple method which has yielded apparently consistent results and some useful information. The patients studied were for the most part infants and children in the St. Louis Children's Hospital who were receiving penicillin therapy and in addition a few adults from the medical service of Barnes Hospital on whom observations were made through the kindness of Dr. W. Barry Wood Jr. and his assistants.

The method of testing the titer of penicillin in the body fluids has been described in a separate paper¹ and consists in determining the smallest amount of the fluid which will produce complete inhibition of a standard strain (209) of *Staphylococcus aureus*. Such complete inhibition of this strain occurs regularly with 0.02 unit of standard penicillin when 0.1 cc. of a penicillin solution is used in the test so that 0.02 unit in 0.1 cc. or 0.2 unit per cubic centimeter is the lowest penicillin titer easily recognized by the method. In occasional instances we have used 0.2 cc. of fluid in the test, so that 0.1 unit per cubic centimeter could be detected. Since our chief interest lay in the detection of conditions favoring the production of higher penicillin levels and gross rather than minor variations in penicillin concentration during therapy, the titer levels routinely were in relatively wide steps.

From the Department of Pediatrics, Washington University School of Medicine, and the St. Louis Children's Hospital.
1. Cooke, J. V.: A Simple Clinical Method for the Assay of Penicillin in Body Fluids and for the Testing of Penicillin Sensitivity of Bacteria, J. A. M. A., to be published.

Usually 0.1 cc. of undiluted fluid, of 1 in 2, 1 in 5 and 1 in 10 dilutions were used, corresponding to 0.1, 0.05, 0.02 and 0.01 cc. respectively, and the lowest dilution giving complete inhibition was called the titer or level and expressed in units per cubic centimeter as 0.2, 0.4, 1 and 2 units. It is apparent that these titers actually indicate minimum levels, since, for example, 0.4 is more than 0.4 but less than 1 unit per cubic centimeter. In some cases additional dilutions giving more exact levels were done, but in general it was felt that except in special instances the information obtained by determining the titer within 0.1 or 0.2 unit per cubic centimeter at the higher levels would not justify the additional technical work involved.

A few general statements may be made regarding the material and the results.

It is apparent that one of the most important factors in the penicillin level is the time that has elapsed since the penicillin was injected, and it is therefore important to supplement any figures by supplying this elapsed time. Consequently we will speak of "one hour" or "two hour" blood (serum) levels to indicate that penicillin was injected one or two hours before the specimen was taken and twenty-four hour spinal fluid levels when the specimen was taken twenty-four hours after an intrathecal injection. In this connection it may be mentioned that in the routine administration of penicillin at stated intervals by nurses in a busy service and with reduced wartime personnel there may at times be some irregularity in the time the dose was given. We have felt that an occasional discrepancy in the blood penicillin level might be related to some such irregularity, but the general results have been so consistent that this has apparently played a minor role. An interesting example might be cited in which we were much disturbed to find a three hour blood level higher than the two hour blood level, but on investigation it was learned that the patient by mistake had been given a dose of penicillin at the end of two hours.

The potency of the penicillin used in therapy has not been tested routinely, but we have tested the commercial products at times and in 10 instances have found that the titer was identical with a standard penicillin while occasionally it was higher. Only once was a product tested and found defective. At one time, soon after penicillin was made available, some of our routine blood level tests showed only traces of penicillin. An examination of the particular preparation used on these children gave a titer of only about one-fourth its rated potency. With this single exception we have no observations which would indicate that the penicillin used was not of standard strength.

The unit dosage of penicillin used in infants and children is much higher as compared with the body weight than in adults and gives an opportunity to observe the effect of such relatively larger doses. For this reason we have included the body weight and sometimes the approximate units per kilogram dosage. In general, however, no proportional relationship was noted attributable directly to the units per kilogram dosage.

The results to be presented are taken from about 1,000 penicillin determinations of various body fluids over a period of months on more than 40 patients, most of them infants and children. Many of the tests were done as routine blood levels on patients receiving penicillin for various acute infections and were duplications which served only to confirm the reliability of the method. Although certain of the observations were

made from deliberately planned experiments of penicillin injections, in most instances the tests were adapted to the routine clinical penicillin therapy. For this reason there were certain omissions of observations which might have been of interest.

For the purpose of presentation and discussion, we have divided the observations into several groups dealing with the penicillin concentrations found in various fluids under different conditions. Certain of these are sufficiently similar to allow them to be tabulated, but in other categories the conditions in different patients varied so much that it is necessary to describe briefly some of the individual cases. No attempt will be made to discuss the clinical effect of penicillin therapy in the patients, but in most of them it was quite satisfactory in curing the infection.

BLOOD CONCENTRATION CURVE OF PENICILLIN AFTER ADMINISTRATION BY VARIOUS ROUTES

The usual method of injecting penicillin is intramuscularly, and we have followed the blood levels at intervals on a number of patients after varying doses by this route. In table 1 are collected 23 separate blood curves on 14 patients, in some of whom the levels after intramuscular injection are compared with those after subcutaneous administration while others received only intramuscular or subcutaneous penicillin. In 1 case the levels after an intravenous dose were compared with those found after intramuscular and subcutaneous injection. Most of these patients had been receiving penicillin regularly for a period of days in doses of from 300 to 2,800 units per kilogram of body weight when the observations were made, although 2 were given only a single large dose.

In general, the results are consistent in showing that both with intramuscular and with subcutaneous injections of penicillin the highest blood level occurs within thirty minutes and by one hour it has fallen almost 50 per cent, while in the second hour the drop is still more striking. In the tests made ten minutes after the injections also no striking differences were noted between the intramuscular and subcutaneous routes, and it was rather surprising that such rapid absorption took place as indicated by titers of more than 0.5 unit per cubic centimeter. In the single patient (Louise F., table 1) in whom the penicillin blood levels were followed after an intravenous injection, the highest level (2 units per cubic centimeter) was found at ten minutes, as was to be expected. It was of interest, however, that the half hour and one hour levels were essentially the same as those after intramuscular and subcutaneous injection of the same dose of penicillin in this patient. We have had no opportunity to follow the blood penicillin levels after continuous intravenous or continuous subcutaneous administration.

The subcutaneous injection of penicillin therapeutically has not been recommended because of the belief that by this route absorption was slower and more irregular than after intramuscular injection and that such injections were more painful. The observations recorded in table 1 show no evidence of any difference in absorption between the two methods if one can judge by the blood levels attained. In our experience the subcutaneous injections have produced only a slight burning sensation lasting a short time and have not caused more discomfort than intramuscular injections. Indeed, several adults on whom both kinds of injection were used stated that the subcutaneous was less annoying. The 2 children Janet C. and Charles H. (table 1)

who received single doses of 25,000 and 100,000 units respectively by the subcutaneous route made little objection to the procedure. The penicillin blood levels in these 2 subjects varied somewhat from the other patients who had been receiving regular injections. In 1 (Janet C.), who was given 25,000 units, the half hour and one hour levels were identical (0.8 unit per cubic centimeter) while in the second (Charles H.), who got 100,000 units, the one hour level (4 units per cubic centimeter) was ten times that found at one-half hour and at one hour (0.4 unit per cubic centimeter). We have no explanation to offer for these differences except the possibility that single large doses may react differently from continued regular injections. Some observations which suggest that the levels tend to be higher after repeated injections will be mentioned later.

One discrepancy appears in 3 patients (Robert H., Iola B. and Dr. V.) listed in table 1, in whom very much lower blood levels were attained than expected from the dosage of penicillin given and when compared with all the other patients studied. All 3 had

meter or less, but in most of the children receiving penicillin regularly every three hours and followed for a number of days the blood level at two and one-half to three hours after a penicillin injection has often been from 0.2 to 0.4 unit per cubic centimeter and occasionally has been as high as 1 unit. This is illustrated in table 2, in which most of the patients were older children and also in table 4, in which only infants are included. The units of penicillin per kilogram of body weight given intramuscularly is indicated, but this appears to bear no relation to the three hour level in the blood.

The final disappearance of penicillin from the blood at least to the point where it can no longer be recognized by the method used is of some interest, although it seems doubtful if such small amounts could be of therapeutic value. In only 3 children have we made tests at intervals of two or three hours after the discontinuance of intramuscular therapy. In 1 0.1 unit per cubic centimeter (the lowest titer possible by the method used) was found at four hours but not at six

TABLE 1.—Blood Penicillin Curves After Administration by Various Routes

TABLE 1.—Blood Penicillin Curves After Administration by Various Routes											
Patient	Age	Weight, Kg.	Penicillin			Blood Penicillin Levels, Units per Cc.					
			Dosage	Units per Kg.	Interval	Route	10 Min.	30 Min.	1 Hr.	2 Hr.	3 Hr.
Louise F.	Adult	55	20,000	350	2 hr.	Intramuscular	...	1.0	0.6	0.1	...
			60,000	1,100	2 hr.	Intramuscular	0.6	1.4	1.0	0.2	...
			60,000	1,100	2 hr.	Subcutaneous	0.6	1.4	0.8	0.2	...
			60,000	1,100	2 hr.	Intramuscular	0.5	1.0	0.0	0.2	...
			60,000	1,100	2 hr.	Subcutaneous	0.8	1.2	0.6	0.2	...
			60,000	1,100	2 hr.	Intravenous	2.0	1.4	0.6	...	...
Delores M.	3 mo.	3.5	60,000	1,100	2 hr.	Intramuscular	...	1.2	0.6	...	...
			10,000	2,800	1 hr.	Subcutaneous	...	1.2	0.6	...	...
			10,000	2,800	3 hr.	Intramuscular	...	0.2	0.4	0.2	...
Robert H.	9 yr.	22.6	10,000	450	3 hr.	Subcutaneous	...	0.2	0.4	0.2	0.2
			10,000	450	3 hr.	Intramuscular	...	...	0.4	0.2	0.2
Paul W.	Adult	55	30,000	550	3 hr.	Subcutaneous	...	...	0.5	...	...
			30,000	550	3 hr.	Intramuscular	...	1.6	...	...	...
David B.	2 yr.	13.4	5,000	375	2 hr.	Intramuscular	...	1.8+	1.8	...	...
			10,000	750	2 hr.	Intramuscular	...	1.0	...	0.4	...
			10,000	600	3 hr.	Intramuscular	...	0.4	0.4	0.2	...
John W.	1½ yr.	16.8	10,000	450	2 hr.	Intramuscular	...	0.4	0.6	0.1	...
Iola B.	Adult	44	20,000	300	2 hr.	Intramuscular	...	1.0	0.8	0.2	...
Dr. V.	Adult	72	20,000	300	3 hr.	Intramuscular	...	1.2	0.8	0.5	...
Clarence J.	Adult	70	10,000	800	3 hr.	Subcutaneous	...	...	0.8	0.2	0.1
Wayne C.	2 yr.	12.5	10,000	300	3 hr.	Subcutaneous	...	...	0.6	0.2	...
Donald K.	14 yr.	35	10,000	300	3 hr.	Subcutaneous	...	0.8	0.8	0.2	...
George W.	12 yr.	33	10,000	300	*	Subcutaneous	...	0.4	4.0	0.4	...
Janet C.	12 yr.	25.6	25,000	900	*	Subcutaneous	...	...	...	...	...
Charles H.	7 yr.	20	100,000	5,000	*	Subcutaneous	...	...	...	...	...

* Single dose.

received penicillin regularly for some time with relatively little clinical effect. One (Robert H.), who had received 500,000 units in an experimental study, had generalized sarcomatosis, so that no clinical change could be expected. The 2 others, however, had localized infections which showed little change during the therapy. One possibility that suggested itself for the low levels observed was that the penicillin preparation they were receiving at the time the tests were done was below standard. This seems much less likely, however, than the possibility that some individuals do not attain the usual blood levels from causes not yet understood. These observations suggest that especially in patients who are not showing the desired clinical response to penicillin therapy it would be of some value to determine by testing whether penicillin was present in the blood at the expected level.

The disappearance of penicillin from the blood seems to be much more irregular than the initial rise in blood levels after injection. In table 1 it will be noted that the two hour blood penicillin level in most of the cases shown has a tendency to be around 0.2 unit per cubic centimeter. Tests done on other patients after two hours show considerable variation. In some we have found the three hour level to be 0.1 unit per cubic centimeter or less, but in most of the children receiving

penicillin regularly every three hours and followed for a number of days the blood level at two and one-half to three hours after a penicillin injection has often been from 0.2 to 0.4 unit per cubic centimeter and occasionally has been as high as 1 unit. This is illustrated in table 2, in which most of the patients were older children and also in table 4, in which only infants are included. The units of penicillin per kilogram of body weight given intramuscularly is indicated, but this appears to bear no relation to the three hour level in the blood.

THE EXCRETION OF PENICILLIN FROM THE BLOOD INTO THE SPINAL FLUID

Previous observations have indicated that penicillin does not pass readily into the spinal fluid from the blood stream in adults. Our observations have been made in infants from 4 to 34 months of age who received relatively much larger doses of penicillin (500 to 5,000 units per kilogram of body weight) than usually given to adults. The results are given in table 3, in which observations on 9 patients are shown. All were given penicillin intramuscularly except 1, who received an intraperitoneal injection. In 4 of the 9 cases 0.1 to 0.4 unit of penicillin per cubic centimeter was found in the spinal fluid from fifteen minutes to one hour after the intramuscular injection. All of these had acute meningitis. In the infant given penicillin intraperitoneally 0.2 unit per cubic centimeter was found four hours after the injection.

These observations indicate that when relatively large doses of penicillin are given intramuscularly it may be found in the spinal fluid within fifteen minutes to one hour but tends to disappear after one and one-half hours. It may be that penicillin is reabsorbed from the spinal fluid. In a single observation penicillin was present in the spinal fluid four hours after a large intraperitoneal injection.

There is a pronounced discrepancy between the small amount of penicillin found in the spinal fluid after intramuscular injections and the much higher titer in the pleural, peritoneal and subcutaneous tissue fluids to be mentioned later. This is apparently due to the fact that penicillin must be secreted into the spinal fluid probably through the choroid plexus and is not a simple osmotic diffusion from the blood, as occurs in the other fixed body fluids.

PENICILLIN LEVELS IN THE SPINAL FLUID AFTER INTRATHECAL INJECTION

In a small group of 7 infants with acute meningitis we have made daily observations on the penicillin level of the spinal fluid approximately twenty-four hours after intrathecal injection. All were receiving 10,000 units of penicillin once daily intraspinally, and most of the time 10,000 units was also given intramuscularly

TABLE 2.—Daily Penicillin Blood Levels in Children After Intramuscular Injections Every Three Hours

Name	Age, Yr.	Weight, Kg.	Dose	Penicillin				No. of Daily Tests
				Units per Kg.	Blood Level			
					2 Hr.	3 Hr.	4 Hr.	
Nancy R.	1	8.9	2,300	280	...	0.1 to 0.2	...	2
Judith M.	5	19.0	5,000	260	0.4	...	...	4
			5,000	260	...	0.4	...	8
Gayle G.	8	31.8	5,000	150	...	0.4	...	7
Ruby M.	13	41.8	5,000	120	...	0.4	...	4
			10,000	240	...	1.0	...	2
Ruth P.	13	37.2	10,000	260	...	0.4	...	12
John L.	11	27.2	20,000*	730	...	...	0.4	11

* Every 4 hours only.

every three hours. The results of these observations have been collected and summarized in table 4. It will be noted that the twenty-four hour penicillin level in the spinal fluid tends to remain relatively constant in the same child during the period of therapy. This level is higher and may reach 1 to 2 units per cubic centimeter in the smaller babies who got relatively larger doses intrathecally and lower (0.2 to 0.4 unit per cubic centimeter) in older infants.

The possible influence of continued intramuscular injections on maintaining a higher spinal fluid penicillin level during intrathecal treatment has been considered, but we have no definite observations which tend to confirm this. In 2 of the patients (Jean LaR. and John M.) shown in table 4 the intramuscular penicillin injections were discontinued for a period of a week or more during the period of therapy without producing any decrease in the titer of penicillin in the spinal fluid.

Concerning the persistence of penicillin in the spinal fluid after stopping the intrathecal injections, observations were made on only 2 patients in table 4. One was a younger infant with high spinal fluid penicillin levels who continued to receive penicillin intramuscularly after discontinuance of the intrathecal treatment, which may have had some influence on the persistence of penicillin in the spinal fluid. This child (Virginia S.) had a twenty-four hour level of 2 units,

while the forty-eight hour and seventy-two hour levels were 0.4 unit, and at ninety-six hours the titer was less than 0.2 unit per cubic centimeter. The other patient (John M.), an older infant with a penicillin level of 0.1 to 0.4 unit per cubic centimeter in the spinal fluid, had had the intramuscular therapy discontinued

TABLE 3.—Passage of Penicillin from Blood into Spinal Fluid

Name, Age, Mo., Kg.	Penicillin Units Intramuscularly		Interval Before Specimen Taken	Penicillin, Units per Ce.		Diagnosis
	Total	Units per Kg.		Blood	Spinal Fluid	
Robert F. 34 15	20,000	1,300	15 min.	1.0	0.1	Acute meningitis; pneumococcus XIV
Michael B. 19 17	10,000	500	15 min.	...	0.2	Acute meningitis; meningococcus
Oliver O. 16 10.1	20,000	2,000	30 min.	1.0	—0.1	Acute meningitis; pneumococcus IV
Edw. H. 1½ 4.1	20,000	5,000	30 min.	...	0.1	Acute meningitis; pneumococcus V
Dennis K. 14 8.2	20,000	2,500	30 min.	...	—0.2	Acute pericarditis; pneumococcus VI
John M. 14 8.8	20,000	2,300	1 hr. (30 min.)	0.4	0.4	Acute meningitis; pneumococcus XIII
Jean LaR. 4 6.1	20,000	3,300	1½ hr.	...	—0.2	Acute nephritis and peritonitis; pneumococcus I
Dana C. 18 9	10,000	1,100	2 hr.	...	—0.1	Acute nephritis
Vernon O. 30 12	20,000*	1,630	4 hr.	—0.1	0.2	Acute nephritis

* Intraperitoneally.

three days before the intrathecal penicillin was stopped without reduction in the spinal fluid penicillin titer. In twenty-four hours after the intrathecal penicillin was discontinued the spinal fluid level was 0.2 unit per cubic centimeter, but in forty-eight hours there was less than 0.1 unit. The only conclusion drawn from these observations was that penicillin may persist in the spinal fluid for as long as seventy-two hours after intrathecal injections have been discontinued.

A few observations have suggested that in both the blood and the spinal fluid the levels of penicillin may

TABLE 4.—Blood and Spinal Fluid Penicillin Levels in Infants with Acute Meningitis Receiving 10,000 Units Every Three Hours Intramuscularly and Once Daily Intrathecally

Name	Age, Mo.	Wt., Kg.	Units of Penicillin per Kg.	Penicillin Levels Units per Ce.		Number of Daily Tests	Infecting Organism
				Blood 2 Hr.	Spinal Fluid 24 Hr.		
Edna W.	2½	4.8	2,000	1.0	1.0*	6	Hemolytic streptococcus
Raymond P.	3	6.4	780	0.1†	2.0	2	Staphylococcus aureus
Virginia S.	4	6.0	1,000	0.2 to 0.4	0.4 to 2.0	19	Pneumococcus type I
Jean LaR.	4	6.1	1,600	0.2 to 0.4	0.4 to 1.0	32	Pneumococcus type I
John M.	14	8.8	1,100	0.2 to 0.4	0.1 to 0.4	33	Pneumococcus type XXIII
Oliver O.	16	10.1	1,000	0.2 to 0.4	0.1 to 0.2	22	Pneumococcus type IV
Michael B.	16	17.0	600	0.2 to 0.4	0.1 to 0.2	11	Meningococcus

* Intrathecal dosage 20,000 units.

† Intramuscular dosage 3,000 units.

be slightly higher after several days of administration than following the initial doses. This possibility is suggested by the following cases, but we have not had the opportunity to confirm it further:

Ruth W., aged 12 years, with Rocky Mountain spotted fever, was given 10,000 units of penicillin intramuscularly every two hours. After the first injection the blood level at the end of

five minutes after the injection and the other in from 135 to 195 minutes. On the other hand, Rosenberg and Sylvester³ have found penicillin present in the spinal fluid in each of 8 adults, 6 of them after intravenous and the other two after intramuscular injections of 24 to 40,000 units of penicillin. The levels reported varied from 0.03 to 0.35 unit per cubic centimeter without a definite relation of the titer to the time of spinal fluid examination. Our results have indicated that penicillin is secreted into spinal fluid early after an intramuscular injection and at the time the blood penicillin level is at its height but at a titer considerably below that of the blood. This is in striking contrast with the diffusion of penicillin from the blood into the subcutaneous, pleural and peritoneal fluids, which tends to approximate the blood titer. Even though penicillin may be secreted into the spinal fluid during parenteral therapy, its concentration is relatively low and its presence apparently transient as compared with intrathecally injected penicillin. For this reason it would seem that as a means of practical therapy for acute meningeal infections the intrathecal route is far superior, since (1) the spinal fluid penicillin titer persists in good titer for twenty-four hours, (2) large doses are not toxic and (3) penicillin passes readily from the lumbar region up to the cerebral meninges. In the 2 instances in which we have made observations, the spinal fluid penicillin level during intrathecal therapy was not increased by continued intramuscular injections.

The penicillin curves in the blood after intramuscular injections of relatively large doses in infants and children have been somewhat higher than those reported by Rammelkamp and Keefer² in adults. It appears likely that this discrepancy may be due to the difference in methods used for assay. Whatever may be the true values, our results are consistent in showing the highest level of blood penicillin within an hour after repeated intramuscular and subcutaneous injections, with the curve showing a higher peak at the end of thirty minutes and falling off rapidly during the second hour. When penicillin is injected every three or four hours, the concentration in the blood undergoes rather wide variations and only intermittently reaches a presumably effective level. Often, although not always, by the end of the third hour the titer is too low to be considered effective even against very sensitive bacteria. It has been shown¹ by *in vitro* tests that there is a rather wide variation in sensitivity to penicillin even of relatively sensitive organisms, since various strains of *Staphylococcus aureus* and of meningococci differed considerably in susceptibility to penicillin. The statement that *Staphylococcus aureus* or the meningococcus is sensitive to a certain concentration of penicillin therefore apparently applies only to a certain strain of the organism and not to all strains. It is possible that this factor is concerned in certain cases of *Staphylococcus aureus* infection in which penicillin therapy has been ineffective.

Because of the variations that occur in penicillin saturation of the blood and body fluids with different dosages, routes and intervals of injection, it is apparent that, when a patient is said to be resistant to penicillin therapy, not only is the penicillin sensitivity of the infecting organism of importance but also the titer of penicillin in the body reached by the method of ther-

apy employed. It is evident from our observations (table 1), for example, that 10,000 units given at hourly intervals maintains a considerably higher level than 20,000 units every two hours. This raises the question whether in such cases attempts to maintain a continued higher blood penicillin level by more frequent injections would have an advantage over a fluctuating blood penicillin curve with only recurring high peaks obtained by injections at longer intervals. Our opportunity to secure clinical evidence to support the possible advantage of such more intensive therapy in penicillin resistant infections has been limited, but we have recently treated a patient with subacute bacterial endocarditis due to a resistant organism who showed progressive clinical improvement with increasing the intensity of therapy:

Judith H., aged 5 years, with congenital heart defect, had had fever for a period of two months. In the first week after admission she appeared ill and toxic; the temperature ranged from 39 to 40 C. (102.2 to 104 F.) and four successive daily blood cultures showed *Streptococcus viridans*. She was then given 10,000 units of penicillin every three hours intramuscularly for five days. During this time there was but little improvement in the patient's clinical condition, and the temperature developed an irregular septic type with wide swings from 37 to 40 C. (98.6 to 104 F.). The penicillin dose was then increased, so that 10,000 units was given every two hours for the next ten days. There was a prompt fall in temperature for the first three days of this regimen to between 38 and 39 C. (100.4 to 102.2 F.), but for the following week the fever again rose at times to 40 C. (104 F.). The clinical appearance and actions of the child showed some improvement during this period, and two blood cultures remained sterile. The green streptococcus originally isolated from the blood had in the meantime been tested for penicillin sensitivity by the method previously described¹ and found to require 0.4 unit for complete inhibition. This would correspond to 4 units per cubic centimeter. Because of this high degree of resistance the penicillin therapy was increased to 10,000 units every hour for a period of seven days. During this week of intensive therapy the rectal temperature ranged from 36.6 to 38.2 C. (97.8 to 100.7 F.), most of the time below 37.5 C. (99.5 F.) and the clinical improvement was striking, the patient being alert, cheerful and with much improved appetite. Unfortunately, no comparative studies of the concentration of penicillin in the blood were possible during these periods of therapy, but the clinical improvement with more intensive treatment was striking and unmistakable. Because no more penicillin was available after she had been given three and a half million units, and since the patient's clinical condition appeared so good, she was allowed to return home on a "maintenance dose" (0.5 Gm. every eight hours) of sulfamerazine. Within two days after discontinuance of the penicillin therapy the fever rose to 40 C. (104 F.) and the previous toxic symptoms returned.

This case is cited as an infection clinically resistant to penicillin therapy due to an organism proved to be penicillin resistant, in which intensive penicillin treatment was required to produce clinical improvement. It appears that the maximum effect obtained by penicillin in this case was an inhibitory or bacteriostatic effect during the time of relatively high blood penicillin levels, and that when this effect was removed by discontinuing the injections the streptococci were again able to multiply unhindered.

The impression is gained from certain articles on penicillin therapy that the ideal method of intensive treatment and of maintaining a high blood penicillin level is by continuous intravenous drip. We have no observations on blood levels obtainable by this method at

3. Rosenberg, D. H., and Sylvester, J. C.: The Excretion of Penicillin in the Spinal Fluid in Meningitis, *Science* 100:132 (Aug. 11) 1944.

compared with intramuscular or subcutaneous injections at hourly intervals, although we have shown that by the latter method relatively high blood levels can be maintained. As far as children are concerned, the use of continuous intravenous therapy except for short periods is accompanied by certain technical disadvantages which tend to limit its usefulness. In addition to the difficulty of maintaining a continuous flow, after twelve to twenty-four hours there is an added danger of thrombosis or of local infection which increases with the duration of the injection. Many who have had experience with the method would prefer other routes of therapy if equally effective and, as has been our practice in recent years, to reserve continuous intravenous injection for emergencies in which absorption from other routes is poor. We believe that the intramuscular or subcutaneous injection of penicillin at hourly intervals will maintain a high level in the blood and body fluids when this seems desirable and that, at least in children, this method is preferable to continuous intravenous injection.

SUMMARY

A study of the penicillin titer of the blood serum and other body fluids chiefly in infants and children during penicillin therapy showed the following:

After intramuscular injections, the concentration in the blood reached its highest level within thirty minutes, was still moderately high at one hour and fell rapidly during the second hour but often persisted at lower titer for three to four hours. In 1 instance it was found as long as eight hours after an injection.

The blood curves found after subcutaneous injection were quite similar to those after intramuscular injection, and even 100,000 units injected subcutaneously produced little discomfort.

Penicillin was found in the spinal fluid after intramuscular and after intraperitoneal injection but in much lower titer than that of the blood.

Penicillin injected intrathecally during acute meningitis persisted at high levels for twenty-four hours, when large doses were given and continued in 1 case for as long as seventy-two hours after intrathecal injections were discontinued. When relatively smaller doses were injected intrathecally the twenty-four hour level was lower, and no penicillin was found in forty-eight hours.

There was some evidence that penicillin injected intrathecally passed readily from the spinal to the cerebral meninges but less readily from the cerebral to the spinal meninges.

The concentration of penicillin in the subcutaneous tissues and in the pleural and peritoneal fluids tended to approximate that of the blood serum.

The titer of penicillin in the blood and spinal fluid was found to be much higher during renal insufficiency than in the same patient when renal function was apparently normal.

No close relationship was found between the units of penicillin per kilogram of body weight given and the concentration reached in the blood, although the highest levels were found in those receiving relatively large doses. In the same patient and with the same dosage the blood levels tended to remain constant, but considerable variation was found in the levels attained in different patients with similar dosage. There was some evidence that the blood concentration rose to a higher level after repeated injections at two to three hour intervals than after a single dose.

Continued intramuscular or subcutaneous injections of penicillin at intervals of one hour will produce a persistent high penicillin level in the blood and tissue fluids, and at least in children this method has certain advantages over continuous intravenous therapy in cases clinically resistant to penicillin.

Clinical Notes, Suggestions and New Instruments

A NEW MAGNET FOR FOREIGN BODIES IN THE FOOD AND AIR PASSAGES

MURDOCK EQUEN, M.D., ATLANTA, GA.

One of the most difficult and disturbing problems of endoscopy has been the removal of foreign bodies from the stomach. Even the use of the gastroscope and the flexible forceps under biplane fluoroscopic guidance does not circumvent such difficulties. The constant shifting of the position of the foreign body, in a space as large as the stomach, makes it difficult to establish contact between the forceps and the object.

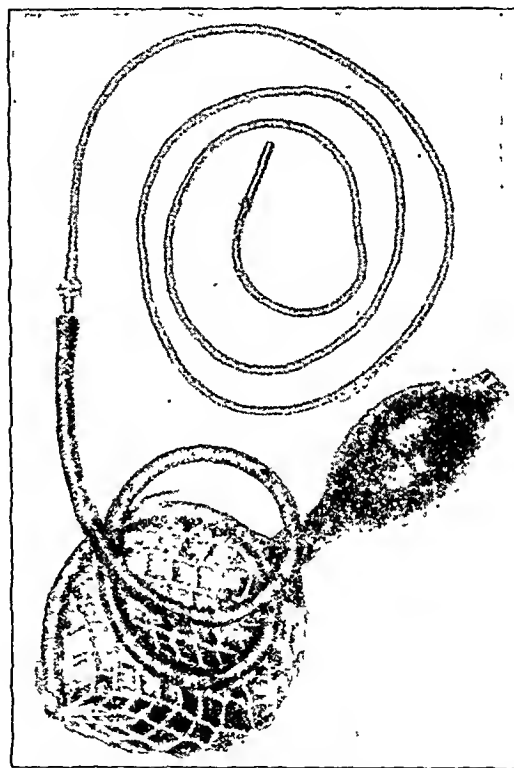


Fig. 1.—The stomach is inflated with air by compression of the rubber bulb attached to the diaphragm and catheter. This inflation lifts away any collapsed portion of the stomach from the pin, allowing the magnet to be passed about freely, and the foreign body is unimpeded in being attracted by the magnet.

Herewith is presented the description of a magnet¹ of cast alnico which has proved highly gratifying in cases of magnetizable foreign bodies in the stomach and tracheobronchial tree. As shown in figure 1, the magnet is 3.5 cm. in length and 0.5 cm. in diameter and is attached to a Levine tube, size 12 E, through which a metal stylet has been inserted to increase the mobility of the tube. The other end of the Levine tube is attached to a rubber bulb, diaphragm and catheter, this apparatus being used for inflating the stomach.

From Ponce de Leon Eye and Ear Infirmary.
1. Manufactured by the General Electric Company.

The magnet is composed of alnico, an alloy of aluminum, nickel, cobalt and iron. Alnico is available in two forms, cast and sintered, and the cast type was employed in this magnet. Alnico is manufactured by pressing together a mixture of powders of the constituent metals under very high pressure in a mold and heating for a considerable time at a temperature near to the melting point in a carefully purified reducing-gas atmosphere.

Because of inherent mechanical properties, alnico magnets are brittle and cannot be reformed to different shapes. They require a considerably stronger magnetizing force to magnetize them completely than do other types of permanent magnet alloys. Alnico has more available external energy for a given volume than has any other permanent magnet material known at the present time.

The following case report is typical of the entire series of cases of foreign bodies removed by the magnet:

H. D., a girl aged 19 months, had swallowed her mother's hairpin (type known as bobby pin) twelve hours previous to



Fig. 2.—Bobby pin in stomach. Note the size of the pin in comparison to the size of the stomach.

admission. The history otherwise was negative. Physical examination showed that the child was moderately well nourished and was not acutely ill. The roentgenogram (fig. 2) shows the enormous size of the pin as compared with the size of the child's stomach.

Under fluoroscopic visualization the magnet was passed down the esophagus and introduced into the stomach. The stomach was then inflated with air by compression of a rubber bulb attached to a diaphragm, which in turn denoted the size of the inflated stomach. This inflation lifted away any collapsed portion of the stomach from the pin and permitted the magnet to be passed around in the stomach with ease. The pin quickly came into the magnetic field, was attracted to the magnet and was removed. The entire procedure lasted only eight minutes.

The new alloy magnet, alnico, is being proved of great value to medicine. For the past two years it has been available as a small permanent type eye magnet. Only a minority of foreign bodies of the food and air passages are magnetizable, but among those which are the use of this instrument will render unnecessary many abdominal operations and decrease bronchial instrumentation.

144 Ponce de Leon Avenue N.E.

COMPLICATIONS FOLLOWING A RAPID TREATMENT OF SCABIES

DEWITT C. DAUGHTRY, M.D.

Passed Assistant Surgeon (R), United States Public Health Service
DULUTH, MINN.

Over the years a great number of preparations have been recommended and widely used in the treatment of scabies, not one of which has proved entirely satisfactory. Until comparatively recently preparations containing sulfur have probably been more universally used than others. Owing to the lengthy treatment necessary and the high percentage of untoward skin reactions, sulfur preparations are being rapidly replaced by benzyl benzoate.

A review of the literature discloses that more uniformly satisfactory results have been credited to the use of benzyl benzoate preparations than to any other sarcopticide heretofore used. It is reported that Nielson¹ of Copenhagen began using 25 per cent benzyl benzoate in the treatment of scabies in 1912. However, not until its reintroduction by Kissmeyer² did it receive much public acclaim. Soon after his original paper, benzyl benzoate became widely used in Great Britain,³ but not until quite recently has it received due mention in this country.⁴ In recent months it has gained its deserved place as an effective sarcopticide in the United States.

The value of benzyl benzoate in the treatment of scabies is without question, but previous writers have presented it as a preparation to be used indiscriminately without fear of untoward reactions. To the contrary, I have made observations which have not previously been observed, or at least I was unable to find any reports. Those observations warrant the writing of this report.

Thousands of cases of scabies treated with benzyl benzoate have been reported in the English literature and smaller series of cases in this country. Of the many thousands of cases reported, no mention is made of untoward reactions from its use in the treatment of scabies.⁵ That alone should arouse skepticism, as there is probably no known medication used locally that does not produce a certain percentage of at least local reactions. One writer reports 8,000 cases of scabies without a serious skin reaction.

Benzyl benzoate is being used rather widely in the treatment of scabies among military personnel. I have used Benylate⁶ exclusively in the treatment of scabies for several months. The results on the whole have been satisfactory. Many minor skin irritations of short duration were observed, but in 4 cases the reactions were classified as severe. The treatment was carried out essentially as described by previous writers and by the various companies⁷ producing such preparations. However, the affected individuals were isolated in the sick bay or hospital for the period of treatment. This form of treatment proved an effective method and it was not necessary to repeat the treatment in any case.

REPORT OF CASES

CASE 1.—K. M. presented a history of intense itching for a period of one week. The itching was more noticeable at night or following a warm bath. A rash had been present for five days.

1. Nielson, cited by Kissmeyer² and by Sutton, R. L., and Sutton, R. L., Jr.: *An Introduction to Dermatology*, St. Louis, C. V. Mosby Company.

2. Kissmeyer, A.: *Rapid Ambulatory Treatment of Scabies with Benzyl benzoate Lotion*, *Lancet* 1:21 (Jan. 21 1937).

3. King, E. R.: *The Benzyl Benzoate Treatment of Scabies*, *Brit. M. J.* 2:626-627 (Nov. 9) 1940. Carslaw, K., and Suenarton, J. A.: *Economy in Treatment of Scabies*, *ibid.* 2:225-226 (Aug. 16) 1941. Gordon, R. M., and Seaton, D. R.: *Observations on the Treatment of Scabies*, *ibid.* 1:685-686 (June 6) 1942. Mellanby, K.; Johnson, C. G., and Bartley, W. C.: *The Treatment of Scabies*, *ibid.* 2:1-4 (July 4) 1942. Graham, J. R.: *Scabies Treated with One Application of Benzyl benzoate*, *ibid.* 1:413-414 (April 3) 1943.

4. Thomas, G. E.: *Treatment of Scabies*, *U. S. Nav. M. Bull.* 27:137-138 (Jan.) 1939.

5. King, E. R.: *Carslaw and Suenarton*.² Mellanby, Johnson and Bartley.³

6. Benylate is composed of benzyl benzoate 25 per cent, emulsified in an aqueous solution of triethanolamide stearate. George A. Breon & Co., Kansas City, Mo.

7. A personal communication with Burroughs Wellcome & Company (U. S. A.), New York, Jan. 12, 1944. A personal communication with George A. Breon & Co., Inc., Kansas City, Mo., Jan. 14, 1944.

Examination revealed scattered papular, papulovesicular and excoriated lesions over the body and extremities. The lesions were more diffuse between the fingers, in the axilla and on the penis.

Treatment consisted in a thorough warm soap bath followed by thorough application of Benylate to the entire skin surface with the exception of the face and head. The original application was let dry and Benylate was reapplied in five or ten minutes. All contaminated clothing and bed linens were discarded. After a period of twenty-four hours the medication was removed by means of another warm soap bath.

The patient complained of some smarting while the medication was being applied; however, the discomfort soon disappeared and the patient spent a comfortable night. About twelve hours later the patient was awakened with an intense burning and itching sensation and on examining himself he noticed a fine rash over the entire area to which the Benylate had been applied.

The dermatitis had a typical scarlatiniform appearance. A dermatologist and a member of the local health department were unable definitely to rule out scarlet fever. However, because of the history, absence of fever and other systemic manifestations it was agreed that the condition was a local drug reaction.

The pruritic dermatitis produced considerable discomfort for a period of ten days and then faded rapidly. There was no exfoliation of the skin following disappearance of the dermatitis.

CASE 2.—O. T. was seen with typical scabies. The history and physical findings were almost identically those of case 1. The treatment was as previously elaborated. Twenty hours after the application of Benylate the itching increased and the patient noticed what he described as a "prickly heat" over the skin surface to which the medication had been applied. Examination revealed the type of rash described in case 1. The secondary rash was treated symptomatically and it began to disappear on the sixth day. Diagnosis of a local drug reaction was made by exclusion.

CASE 3.—J. M., a young white man, was treated for scabies as previously described. Fourteen hours after treatment was instituted he began to experience intense itching and burning. He observed what he described as a "wind burn" rash on the arms, legs and to a lesser extent on the body. Physical examination revealed a flushed appearance to the skin and a very fine, erythematous papular rash, which was quite prominent over the extensor surface of the extremities and to a lesser extent on the remainder of the skin surface. Symptomatic treatment was instituted after removal of the offending agent. The pruritic dermatitis persisted for five days and then slowly faded.

CASE 4.—R. T., a young sailor, was given the benzyl benzoate rapid treatment for scabies. Sixteen hours after the initial application of the medication the patient reported that his "itch" was worse. Examination revealed a rather diffuse, large, red, scaly and slightly elevated rash over the entire body and the extremities. The offending agent was removed and a bland antipruritic ointment was applied. Ten days later the dermatitis began gradually to subside. The patient's final statement was "I'd rather have the itch than the treatment."

SUMMARY AND CONCLUSIONS

Benzyl benzoate is a rapidly effective sarcopticide. It is worthy of continued use especially among military personnel. Let it not be forgotten that troublesome local skin reactions do occur. Patients should be warned to discontinue treatment immediately if the rash and itching become worse. The unwarned patient's tendency is to apply more medicine if the itching does not cease immediately.

In the 4 cases reported the local drug reaction was severe as compared to the disease for which it was used. In case 4 there was a history of previous skin allergy; however, in the other 3 cases there was no history suggestive of previous allergic manifestations.

1015 North Ninth Avenue East.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., Secretary.

YEAST EXTRACT CONTAINING VITAMIN B COMPLEX (See New and Nonofficial Remedies, 1944, p. 606).

The following dosage form has been accepted:

MEAD JOHNSON & CO., EVANSVILLE, IND.

Brewers' Yeast Powder: 28.35 Gm. (11 level teaspoons or 3 level tablespoons). Each gram contains not less than thiamine (vitamin B₁) 0.18 mg., riboflavin (vitamin G) 0.06 mg. and niacin 0.4 mg., together with other factors of the vitamin B complex commonly occurring in brewers' yeast. Dosage for infants, $\frac{1}{2}$ to 1 level teaspoon in the milk formula. For children 1 to 6, 1 to 2 level teaspoons in milk or tomato juice. For use as a supplement in the treatment of deficiencies of various factors of the vitamin B complex, dosage will depend on the type of specific vitamin therapy employed, the severity of the condition and the individual patient; in general, 2 to 4 level teaspoons daily. For supplementary use with specific vitamin therapy in ariboflavinosis and pellagra, 7 or more level teaspoons daily.

Brewers' Yeast Tablets: 0.4 Gm. Each tablet contains 0.4 Gm. dehydrated brewers' yeast supplying thiamine hydrochloride 0.06 mg., riboflavin 0.02 mg. and 0.15 mg. niacin together with other factors of the vitamin B complex commonly occurring in brewers' yeast. Dosage for children, 6 to 10 tablets daily; for adults, 10 to 12 daily; for pregnancy and lactation, 12 to 20 tablets daily. For use as a supplement in the treatment of deficiencies of various factors of the vitamin B complex, dosage will depend on the type of specific vitamin therapy employed, the severity of the condition and the individual patient; in general, 8 to 20 tablets daily. For supplementary use with specific vitamin therapy in ariboflavinosis and pellagra, 35 or more tablets daily.

Preparation—

Mead's brewers' yeast powder is a dried, nonviable strain of *Saccharomyces cerevisiae*, cultured especially for its vitamin content. It is readily suspended in water, milk, tomato juice or other suitable fluids.

PENICILLIN (See THE JOURNAL, Oct. 7, 1944, p. 367).

The following dosage forms have been accepted:

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Penicillin Sodium: Vials containing 100,000 Oxford units.

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Ampuls Penicillin (Sodium Salt): 25,000 Oxford units and 100,000 Oxford units.

E. R. SQUIBB & SONS, NEW YORK

Penicillin Calcium: 100,000 Oxford units.

SCHENLEY LABORATORIES, INC., LAWRENCEBURG, IND.

Penicillin (Sodium Salt): 25 cc. vials containing 100,000 Oxford units.

THEOPHYLLINE (See New and Nonofficial Remedies, 1944, p. 372).

The following dosage form has been accepted:

MERCK & CO., INC., RAHWAY, N. J.

Theophylline (Powder): 30 Gm., 124 Gm. and 498 Gm. bottles.

THEOPHYLLINE ETHYLENEDIAMINE (See New and Nonofficial Remedies, 1944, p. 373).

The following dosage form has been accepted:

MERCK & CO., INC., RAHWAY, N. J.

Theophylline Ethylenediamine (Powder): 30 Gm., 124 Gm. and 498 Gm. bottles

SULFARSPHENAMINE (See New and Nonofficial Remedies, 1944, p. 218).

The following additional dosage form has been accepted:

MERCK & CO., INC., RAHWAY, N. J.

Ampuls Sulfarsphenamine: 0.5 Gm.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - CHICAGO 10, ILL.

Cable Address - - - "Medic, Chicago"

Subscription price . . . : Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new, always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, JANUARY 13, 1945

DEATHS OF PHYSICIANS IN 1944

The obituaries of 3,172 physicians were published in *THE JOURNAL* during 1944. The American Medical Directory Report Service recorded 3,415 deaths of physicians in the United States and possessions, or 243 more deaths than obituaries published in *THE JOURNAL*.

Estimation of the net increase to the profession is difficult because of the varying times of graduation in medical schools through the accelerated program introduced in 1942. However, the graduates from July 1, 1943 to the end of 1944 approximated more than 10,000, suggesting a substantial increase to the profession. The majority of this group will enter military service.

Age.—The average age at death was 65.3 in 1944 as compared with 65.2 in 1943 for 3,156 deaths published in *THE JOURNAL*. Fifty-five physicians died between the ages of 25 and 29, 98 between 30 and 34, 73 between 35 and 39, 78 between 40 and 44, 119 between 45 and 49, 157 between 50 and 54, 267 between 55 and 59, 385 between 60 and 64, 523 between 65 and 69, 517 between 70 and 74, 421 between 75 and 79, 286 between 80 and 84, 138 between 85 and 89, 44 between 90 and 94 and 11 between 95 and 100.

Causes.—Heart disease continues to lead the causes of death among physicians. In compiling these statistics, the usual procedure of including primary causes and contributory factors was followed. Coronary thrombosis and occlusion were responsible for 638 deaths in 1944 as compared with 598 in 1943; 250 occurred in the age group 60 to 69. Diseases of the myocardium and pericardium totaled 193, angina pectoris and other coronary diseases 135, chronic heart valvular and rheumatic heart disease 28, subacute bacterial endocarditis (except rheumatic fever) 4 and other diseases of the heart 403. Cerebral hemorrhage, thrombosis and embolism were responsible for 366 deaths, arteriosclerosis for 186 and cardiovascular diseases for 72. Cancer and tumors accounted for 344 deaths, 135 of which were classified under cancer of the gastrointestinal tract.

Two hundred and thirty-eight deaths were attributed to pneumonia, of which 11 were atypical or virus pneumonia. Chronic nephritis and uremia accounted for 125 deaths and acute nephritis for 17. Diseases of the circulatory system were responsible for 81 deaths, diabetes 52, Hodgkin's disease and leukemia 32, pernicious anemia 10 and other diseases of the blood 13, diseases of the gastrointestinal tract 31, cirrhosis of the liver 34 and other diseases of the liver 3, tuberculosis 34, diseases of the respiratory system 23, peptic ulcer (ulcer of the stomach and duodenum) 22, peritonitis 19, influenza 19, pulmonary embolism and thrombosis 17 and other embolism and thrombosis 11, aneurysm 5, diseases of the gallbladder (bile duct) 11, diseases of the nervous system 17, diseases of the prostate 15, asthma 14, appendicitis 5, hernia, chronic arthritis, diseases of the bones and organs of locomotion, encephalitis, syphilis and abscess 4 each, diseases of the spinal cord 3, and diseases of the genitourinary tract 3, alcoholism 2, bacteria, septicemia and pyemia 2 and other infectious diseases 2. There were 4 deaths from epidemic hepatitis, 2 from typhus, 3 from tsutsugamushi fever, 1 from undulant fever, 1 dementia precox, 1 Rocky Mountain spotted fever, 1 pellagra, 1 typhoid, 1 hiccup, 1 obstructive jaundice, 2 in which aplastic anemia was attributed to x-ray and radium emanation, 1 glioma, 1 actinomycosis and 1 allergy. Senility was returned as a cause in 35 deaths and 10 were classified as ill defined. There were 38 deaths following an operation and 25 for which causes were not returned.

Accidental Deaths.—Of 138 accidental deaths, automobile accidents accounted for 58. Of the 21 deaths involved in falls, 13 specified fractures of the hip, skull and femur. Of the unusual accidents, 1 physician was killed when an elevator from which he was alighting started upward and crushed him, 1 died of injuries received when a team of horses he was driving ran away, 1 died as the result of a stray bullet that struck him while hunting, 1 was instantly killed by the accidental discharge of his shotgun when he stumbled over a wire, 1 died of burns received when an oil stove exploded, 1 of injuries received when his horse rolled over him and 1 of injuries received when caught by a power saw.

Suicides and Homicides.—Of the 41 suicides recorded, 24 died as a result of bullet wounds, 1 using this method after he had attempted death by illuminating gas and narcotics. Next in order of method used was drugs 6, poisoning 3, hanging 3, carbon monoxide, cut artery and drowning 1 each, "respiratory strangulation" 1 and "fall from roof" 1. Shooting was the method used in the 4 homicides reported.

Miscellaneous Positions.—Among the deceased were 310 who had been teachers in medical schools, 143 of whom had reached the professorial rank. There were 5 deans, 121 members of boards of education, 4 teachers

in a public school and 1 school superintendent. Two hundred and twenty had been health officers, 146 members of boards of health and 24 members of boards of medical examiners. One served as lieutenant governor of Louisiana, 1 as surgeon general of the commonwealth of Massachusetts with the rank of brigadier general, and 34 members of their state legislatures. One had been consul to the Bahama Islands, 1 the Italian consul at Mexico City and 1 a member of the Revision Committee of the U. S. Pharmacopeia.

Association Officers.—The decedents included 1 physician who had been Vice President, 1 Trustee, 1 Council member, 1 honorary life member of a council, 8 section officers and 34 members of the House of Delegates. Forty-five had been presidents of their state societies and 1 secretary. Two hundred and thirty-seven had served as president of their county medical societies and 1 had been president-elect.

Killed in Action

The 3,172 obituaries included 70 physicians who were killed in action during World War II and 113 who died while in military service. In addition, 1 U. S. Public Health Service officer aged 31 died of tsutsugamushi fever while engaged in special war research. Of the group killed in action, specific information was not available in most cases on the type of death; 2 were said to have died of chest wounds, 1 from multiple wounds and 1 from shrapnel severing the spinal cord. A number had first been reported missing in action and subsequently given a presumptive date of death. Theaters of operation designated in official reports as those where injuries resulting in death occurred were the Pacific area 17, European area 10, France 12, Italy 5, North Africa 6, Atlantic area 3, Anzio beach head 3, Normandy 2, Bougainville, Marshall Islands, Isle of Capri, Guam, Tarawa, Coral Sea, Savo Island and Sicily each 1, and 1 died en route from Tunisia to Sicily. Location was not mentioned in 3 obituaries. Of the physicians who were killed in action 26 died in the age group 25 and 29, 33 between 30 and 34, 8 between 35 and 39, 2 between 40 and 44 and 1 between 45 and 49.

Died in Military Service.—Of the 113 physicians who died while in military service, airplane accidents caused the deaths of 20, coronary occlusion 9, coronary thrombosis 5, coronary disease 1, myocarditis 3, heart disease 3, bullet wounds 3, automobile accidents 8, skull fractures 3, malaria 3, accidental drowning 4, parachute accidents 2, meningitis 2, carbon monoxide 2, typhus 2, "gangrene" 2, "extensive multiple injuries" 2, cerebral hemorrhage 2 and 2 died following an operation. One death each was recorded for the classifications of acute morphinism, Hodgkin's disease, malaria, malignant hypertension, Rocky Mountain spotted fever, "died at sea," peritonitis resulting from a bite, atrophy of the

liver, bronchopneumonia, primary atypical pneumonia, accidental asphyxiation, acute hemorrhagic purpura, myelogenous leukemia, injuries received when a boiler exploded, pneumonitis complicated by bronchial asthma, agranulocytosis, respiratory strangulation, "exsanguination," tuberculosis, accidental burns incurred during an explosion when stepping on the starter of a vehicle, and 2 tsutsugamushi fever, 1 of which was complicated with malaria. One each was reported for carcinoma of the liver, sigmoid, brain and intestine and 2 of the stomach. There were 5 suicides and 4 deaths for which no cause was given. Twenty died in the ages between 25 and 29, 33 between 30 and 34, 27 between 35 and 39, 15 between 40 and 44, 8 between 45 and 49, 5 between 50 and 54 and 5 between 55 and 59.

Since the outbreak of World War II THE JOURNAL has recorded the deaths of 101 physicians who died in action and 255 who died while in military service. THE JOURNAL again affirms its opinion that the group of published military deaths does not reflect a true picture of the situation as a whole. The notices received probably represent only a certain proportion of the deaths recorded in Washington and not yet released for publication.

RURAL HOSPITALIZATION AND MEDICAL CARE

At the third war conference of the American Hospital Association at Cleveland in October four papers on rural hospitalization offered much of interest to the physician, the hospital administrator and the social planner.

Carroll P. Streeter,¹ managing editor of the *Farm Journal*, showed that rural areas demand health facilities equal to those of the cities, without charity and without compulsory health insurance. The farmers want better health service, preventive and curative, and they want to have a part in planning it. They want to pay for it on a voluntary, cooperative basis, according to Mr. Streeter. In support of his plea, he points out that farmers are now cooperating successfully in 2,742 buying cooperatives with 1,270,000 members and 600 million dollars worth of goods and services purchased. Moreover, he indicated that farmers have had "mutual irrigation companies, associations for the artificial breeding of dairy cattle, orchard spray rings, cooperative creameries, elevators and livestock shipping associations, farm loan associations, machinery cooperatives, mutual telephone companies, rural electrification cooperatives and half a hundred others." Farmers participating in the Farm Security Administration plans have shown that they are good buyers of health insurance. In conclusion, Mr. Streeter says "Farm folks will invariably

1. Streeter, C. P.: Farmers Want a Health Program. This and the other articles cited were read before the American Hospital Association third war conference, Cleveland, during October 1944.

surprise you. . . . You will be surprised at how well informed, intelligent, progressive and sound in their judgment they are. . . . They won't know much about hospitals or hospital care, of course, but they will have the most worthwhile idea of anybody on what they need, what they want and how they want to pay for it. They can communicate the plan to the people whom they represent with less sales resistance than you can."

Mrs. Jerome Evanson,² state director of education, North Dakota Farmers Union, writes on organized planning as the great need in rural health. She points out that doctors as well as other human beings must seek areas where they can make a living. Rural areas, to attract doctors, must provide (1) assurance of income, (2) modern facilities to attract physicians, (3) opportunities for study and research. She might well have added opportunities for companionship with people of like interests, opportunities for social and cultural life and opportunities for the education of their children. She calls also for public health services, including maternal and child health programs, rural sanitation, health clinics, mobile units for immunization, public health nurses and a nutrition program. All these are in addition to rural hospitals. She calls for hospitals, public health services, physician's offices and dental offices to be brought together under one roof, serving the people as a health center with modern diagnostic facilities. She pays tribute to the Blue Cross plan but says that it has been too costly for the great majority of farm families. Like the previous speaker, she praised consumer cooperative types of development but, unlike the previous speaker, she believes that "if the education of the child is the responsibility of the government then surely the health of the child should be a government responsibility."

Kenneth E. Pohlmann,³ senior health services specialist, Farm Security Administration, called particular attention to the needs of the medically indigent in rural areas. The utilization of hospital care, physician services, surgery and specialist care tends to be lower in rural areas than in urban areas, even in the same income groups. Part of this is due to psychologic attitudes among farm people, who still tend to regard the hospital as a place to die in and a physician as some one to avoid except during critical emergencies. The author, however, believes that "if these attitudes are thoroughly analyzed they are found to spring from an adjustment to customary lacks. They are defense mechanisms that have naturally developed in the face of inadequate resources, which in turn spring from the economic and geographic difficulties prevailing." He discussed the Federal Security Administration program at some length and supported the recent statement by the Subcommittee

on Medical Care of the Committee on Administrative Practice of the American Public Health Association in these words: "The opponents of that statement will have to admit the validity of much that is said." He regards the Farm Security Administration prepayment plans for medical and hospital service as of great benefit but considers them inadequate, incomplete and fragmentary. He concludes:

Rural people want more hospitals and health centers, though they are not always sure as to what they must do to get them; they are asking for due consideration to the needs of rural areas in the distribution of surplus medical and dental equipment now held for war purposes. They want an expanded program of public health through the establishment of more district and county health units. They also want more adequate distribution of medical and dental personnel as between rural and urban areas

The fourth contribution to this symposium was the story of the Hillsdale Community Health Center, Hillsdale, Mich., by Harold F. Stock,⁴ president of the board of trustees of the Hillsdale Community Health Center. Mr. Stock makes a great many points, some accepted and some controversial. Briefly, they are as follows:

1. Place hospital facilities at the disposal of health departments.
2. Make visiting nurse service available to every home in the county.
3. Cooperate with home maternity instruction and nursing.
4. Extend diagnostic services at very low rates.
5. Give low patient rates and pay high wages.
6. Form an active woman's auxiliary.
7. Establish a private fund for charity patients.
8. Provide consolidated medical clinics for all the town's physicians.
9. Perform laboratory services for the public health department.
10. Admit patients of osteopaths.
11. Operate a dental clinic.
12. Promote hospital and medical service plans "as the logical answer to the anarchistic cry for socialized medicine. Let's socialize our own medicine! In 1940, hospital service insurance was practically nonexistent; today 10,440 of the county's 28,000 people are protected (in Hillsdale County—Ed.).

The articles in this symposium indicate that the people in the rural regions are awake to the need of equalization between the health service they now have and that which is enjoyed in urban areas. They are not disposed to look to the government except as a last resort. As Mr. Streeter points out, "Most farmers of the United States are in revolt against government planning, government interference with their private lives and businesses (except as war makes necessary) and government paternalism. They want the government to run as few things as possible and they think that it runs too much now. They are fed up with the AAA and the OPA." They are ready to cooperate with hospital and medical leadership. They are willing, apparently, to be technically advised as to ways and means of obtaining their objective, which is better hospital and medical service and more of it at prices which

2. Evanson, Mrs. Jerome: *Hospital Needs as the Farmer Sees Them.*

3. Pohlmann, K. E.: *Hospital Care Program of the Farm Security Administration.*

4. Stock, H. F.: *A Rural Hospital Serves Its Community.*

they can afford to pay and on a basis of independent self reliance. The best way to forestall government control of medical services is to keep that control in the hands of local people. The ideas expressed appear to offer a wide open door of opportunity for medical societies in the rural areas and especially for state medical societies in predominantly rural states.

Current Comment

SOME TOXIC ASPECTS OF DIGITALIS THERAPY

Digitalis preparations are used extensively in the treatment of heart disease. In obesity they have been used to reduce food intake and weight by causing loss of appetite. Their use in ointments for the treatment of indolent ulcers and for protection against the lethal effect of high altitude has been suggested. Probably their medicinal use may have unintended toxic by-effects. The toxic action of digitalis glycosides on the cardiac function has been fraudulently used to cause simulation of heart disease for the collection of life insurance. While physicians are usually well acquainted with the functional cardiovascular and cerebral manifestations of digitalis poisoning, they are less familiar with some recent clinical and experimental evidence pointing to the induction of anatomic cardiovascular and cerebral reactions and hematic effects which are of medical and medicolegal significance. Experimental subjection of animals of different species to lethal and sublethal doses of digitalis glycosides resulted in myocardial hemorrhages, necrosis and fibrosis as well as in cerebral degenerations, necrosis and gliosis.¹ Travell and her associates² were unable to demonstrate in patients receiving large oral doses of digitalis for varying periods of time any myocardial hemorrhages at necropsy, but the occurrence of myocardial and cerebral lesions in man as the result of digitalis poisoning is nevertheless suggested by the resulting functional disturbances. Gilbert, Trump and de Takats³ observed an increased incidence of thrombosis in cases treated with digitalis and found that the clotting time was appreciably shortened following its use. Confirmatory results are reported by Massie and his co-workers,⁴ who suggest that digitaloids exert a thromboplastic action. Digitalis glycosides are saponin-like substances; crude digitalis preparations contain appreciable quantities of saponins, which may favor thrombosis by their effects on the vascular wall.

1 Buchner, F. Herzmuskelnekrosen durch hohe Dosen von Digitalisglykosiden. Arch f exper. Path u Pharmacol 176: 59, 1934. Hueper, W C, and Ichniowski, C T. Pathologic Lesions in Organs of Cats, Guinea Pigs and Frogs Produced by Digitalis Poisoning, J. Lab & Clin Med. 26: 1565, 1941. Dearing, W. H.; Barnes, A R, Kernohan, J. W., and Essex, H. E. Effects on the Cellular Structure of the Central Nervous System, Am Heart J 25: 734, 1943.

2 Travell, Janet; Gold, Harry, Modell, Walter, and Auerbach, Oscar. A Study of Cardiac Hemorrhages Caused by the Digitalis Glycosides, Federation Proc 1: 170 (March) 1942.

3 Gilbert, N C; Trump, R A, and de Takats, Geza. Effect of Digitalis on the Clotting Mechanism, J. A M. A. 124: 736 (March 11) 1944.

4 Massie, Edward; Stillerman, H. S; Wright, Claude Starr, and Minnich, Virginia: Effect of Administration of Digitalis on Coagulability of Human Blood, Arch Int Med 74: 172 (Sept) 1944.

HEALTH INSTRUCTION IN OREGON HIGH SCHOOLS

Increased interest in health instruction in the nation's schools is apparent in a syllabus just received from the Oregon State Department of Health.¹ This material is organized in two parts: Part I concerns the identification of the major health problems of living. First is a consideration of the administrative aspects of school health education. This is followed by material, largely in question form, outlining the principal problems, which include care of the body to promote health and to improve the appearance; the development and maintenance of organic vigor and functional body symmetry through play and recreation, plus similar units on diet, communicable diseases, accident prevention, social living, sex, consumer problems and healthful community environment. A useful section tells how to develop the school library on a limited budget. Part II consists of health guide units similar to the sample included in part I and is obviously intended for classroom use. Part III is still in preparation; it is described as "a discussion of the twelve year public school health instruction program in Oregon, including an example of a health scope and sequence chart." Accompanying these basic materials are supplementary manuals issued as part of a series² by a subcommittee of the Oregon State Joint Committee for Health and Physical Fitness. This joint committee has been studying the problems of health and the school population for five years. It includes representatives of the state department of education, the state board of health and the state system of higher education. It has worked through subcommittees, one of which prepared a manual on health services for the school age child in Oregon, another the "Oregon Manual for the Use of the School Health Record Card" and a third a manual on the school lunch. These supplementary manuals are brief, convenient and yet complete. The cooperation between state departments of health, state departments of education and colleges in the state, as exemplified in the Oregon study and the results now beginning to come out of it, is significant for the stimulus it gives to health education at the secondary school level, where health education has long been the stepchild of the curriculum. Perhaps even greater significance attaches to the cooperation between the state health agency and the state educational authority. This trend is in evidence in a number of states, the Oregon plan being one example of a useful and important trend. The existence of such state health and educational programs should be of tremendous value in the development of the nationwide physical fitness program now being launched by the Joint Committee on Physical Fitness, in which the American Medical Association is participating with representatives of the United States government.

1. Hoeman, H S. Developing Health Instruction in the Oregon High Schools, Oregon State Department of Education, 1940, mimeographed.

2. Publications of the Oregon State Joint Committee for Health and Physical Fitness

MEDICINE AND THE WAR

ARMY

THE CONTROL OF DENGUE ON SAIPAN

Shortly after the invasion of Saipan an epidemic of dengue fever occurred among the troops employed in the operation. The rapid increase in the incidence of the disease necessitated prompt control measures. The island commander, on recommendation of the surgeon, designated each unit commander as responsible for the elimination of mosquito breeding within his assigned area and its immediate vicinity. Under the direct supervision of the surgeon a sanitary company undertook mosquito survey and control work in the more thickly populated areas.

The portions of the island inhabited by our military forces were mapped and segmented as to areas of importance. Tremendous quantities of debris were removed and vast areas were cleared. Water pools were oiled, water containers were emptied or otherwise protected from mosquito breeding and tree holes were filled with dirt. All measures for mosquito protection were enforced to the utmost. A solution of DDT was used extensively as an insecticidal spray disseminated by mechanical power sprayers and by airplane. All tents, living quarters and mosquito bars over a wide area were sprayed for a residual effect. Area spraying by aircraft was thoroughly exploited over wide territories. The effects of these procedures were dramatic. The reduction in the larval and adult mosquito population and in the flying population was enormous. Within two weeks of the onset of the control program daily admission of new cases of dengue fell more than 80 per cent, and progressive improvement has occurred since that time.

This experience serves to reemphasize the effectiveness of command action in disease prevention when promptly utilized and efficiently employed under Medical Department recommendations. It further attests the value of DDT as an adjunct to other sanitary measures in the control of insect borne diseases.

NEW AWARD AUTHORIZED FOR ASSAULT SOLDIERS

A new service award for army personnel who participate in a combat parachute jump, combat glider landing or initial assault landing on a hostile shore was recently announced by the War Department. The device is a bronze Indian arrowhead $\frac{1}{4}$ inch high. It will be worn in a vertical position with the point upward on the theater service ribbon which indicates the area in which it was earned. Only one arrowhead will be worn on any theater ribbon. To qualify for the award, officers or enlisted men must take a parachute jump or glider landing in enemy held territory as a member of a force carrying out an assigned mission or take part in the assault waves of an amphibious landing on enemy held shores. Commanders of organizations engaging in assaults of this nature will forward recommendations to the theater commander as soon as practicable after the action has taken place. The arrowhead will be awarded to all personnel who have taken part in any such operation since the start of the war. In order to determine which units in their commands have eligible personnel, theater commanders will review all operations since Dec. 7, 1941. Any eligible individual who is no longer a member of the organization with which the award was earned may obtain an arrowhead by submitting an affidavit to his present commanding officer. Persons who are no longer in the Army should submit an affidavit to any post or camp commander.

CONSULTANT IN MEDICINE OF THIRD SERVICE COMMAND

Col. John Minor, former chief of the medical service, Woodrow Wilson General Hospital, Staunton, Va., has been appointed consultant in medicine of the Third Service Command, Baltimore.

NEW POSITIONS OPEN FOR EXPERT LIMB FITTERS

Army amputation centers in this country are in immediate need of expert limb fitters. Civilians with the necessary technical background in manufacturing, adapting, repairing or fitting orthopedic appliances are being urged by the Army Medical Department to qualify for the newly created positions of "orthopedic technical advisers." These are Civil Service positions.

A technical adviser grade P-4 receives a yearly salary of \$4,428 for a forty-eight hour week. He serves as consultant and adviser to the orthopedic surgeon on the design and construction of artificial limbs and counsels individual amputees on their use. A technical adviser grade P-3 receives a yearly salary of \$3,823 for a forty-eight hour week and acts as assistant, performing specific research, designing and fitting limbs and training enlisted shop personnel.

Orthopedic shops are located at the six Army general hospitals which are amputation centers: Busnell General Hospital, Brigham City, Utah; Thomas M. England General Hospital, Atlantic City, N. J.; Percy Jones General Hospital, Battle Creek, Mich.; Lawson General Hospital, Atlanta, Ga.; McCloskey General Hospital, Temple, Texas, and Walter Reed General Hospital, Washington, D. C.

Inquiries should be directed to the Civil Service Commission or the Office of the Surgeon General, Washington 25, D. C.

MEMBERS OF TWENTIETH GENERAL HOSPITAL TO VIEW HOME MOVIES

A special nine reel motion picture was recently planned, directed and filmed by Dr. Louis H. Twyeffort, Wynnewood, Pa., an instructor in psychiatry at the University of Pennsylvania School of Medicine, Philadelphia, and sent to the 20th General Hospital Unit in India as a surprise Christmas gift from friends at the University of Pennsylvania, where the hospital unit was organized. Three reels show members of the families of medical men, dentists and others serving with the unit, two are devoted to families of nurses, and the remaining four recall personalities and places well known to all who have been associated with the university's medical divisions. When the 20th General Hospital left the University of Pennsylvania for active service early in 1942 the unit included approximately sixty physicians, surgeons, dentists and other officers and more than a hundred nurses.

SURGICAL CONSULTANT TO THE SECRETARY OF WAR

Dr. Sterling Bunnell of San Francisco, noted as an authority on surgery of the hand, has been appointed surgical consultant to the Secretary of War. He reported to Washington November 30, and his first tour included Cushing General Hospital, Framingham, Mass., England General Hospital, Atlantic City, Valley Forge General Hospital, Phoenixville, Pa., Newton D. Baker General Hospital, Martinsburg, W. Va., and Wakeman General Hospital, Camp Atterbury, Indiana.

CHIEF NURSES GRADUATE AT SCHOOL OF AVIATION MEDICINE

Twenty-six "chief nurses" recently graduated at the AAF School of Aviation Medicine, Randolph Field, Texas. The graduates are from Air Force installations throughout the nation and have completed a course in the administrative as well as professional aspects of the position of chief nurse for a period of four weeks. Col. John R. McGraw, acting assistant commandant of the school, presented the diplomas.

RECRUITING STUDENT PHYSICAL THERAPISTS

Recruiting of student physical therapists has been started by the War Department. After an apprenticeship in army hospitals qualified graduates will be commissioned as second lieutenants in the Medical Department. Applicants must be under 38 years of age, must be college graduates with a major in physical education or biologic science, must meet citizenship and physical requirements and must have no dependent children under 14 years of age. Such applicants will start at a salary of \$1,440 a year; on satisfactory completion of six months' training in army general hospitals, students become apprentice physical therapy aides at a yearly salary of \$1,620. Applicants who have had a similar course in civilian institutions will be eligible for this position. On satisfactory completion of their apprenticeship they will be commissioned as second lieutenants. They may be placed on duty overseas or in this country.

WAC RECRUITMENT TO CONTINUE IN 1945

The War Department recently announced that the army will continue to recruit for the Women's Army Corps in 1945. Because of the increasingly high casualty lists and the return of thousands of sick and wounded soldiers to the United States, together with a critical shortage of army nurses, there is an urgent continuing need for several thousand medical and surgical technicians in army hospitals. This need is acute and must be filled. Women enlisted in the WAC for this duty will receive specialized training designed to fit them as enlisted technicians and are assured duty in army hospital wards aiding in the care of sick, injured and wounded soldiers. Other enlisted technicians needed by the Army Medical Department include pharmacists, laboratory technicians, dental technicians and psychiatric social workers.

COMBAT PAY FOR MEDICAL UNITS

Many will welcome assurance that the War Department is giving its attention to additional recognition for men of the Medical Corps serving with combat units. General Eisenhower has recommended to visiting congressmen, says a report from France, that he be given extra combat pay comparable to that of the combat unit he serves.

Secretary Stimson indicates that the case of the man of the Medical Corps presents a separate problem because of his non-combat status under the Geneva Convention, but separate insignia and a separate pay system would seem to clear that hurdle. The Secretary noted also that more Medical Corps men receive technical ratings, thus boosting average pay, but that doesn't help the medic who hasn't his rating or compensate the corps generally when it leaves a safe spot for the shooting front.

TUBERCULOSIS IN THE ARMY

The incidence of tuberculosis, as reflected by the annual hospital admission rate, is only one tenth as high in the Army now as it was in the first world war. The principal factor in the decrease in the army rate is the screening process which is in operation to exclude men with active or potentially active tuberculosis before they are inducted into the Army, Col. E. R. Long, chief consultant on tuberculosis for the Surgeon General's Office, pointed out. Another reason is the fact that among the civilian population tuberculosis is only one third as prevalent now as it was during the first world war.

MAJOR GORDON H. HAGGARD MISSING IN ACTION

Major Gordon H. Haggard, formerly of Hope, Ind., has been reported missing in action since October 7. Dr. Haggard was a flight surgeon with a heavy bombardment group and is listed as missing in action over Germany. He graduated from Indiana University School of Medicine, Indianapolis, in 1933 and entered the service March 27, 1941.

FOURTEENTH CLASS OF AVIATION PHYSIOLOGISTS

Graduation exercises at the School of Aviation Medicine, Randolph Field, Texas, for the fourteenth class of Aviation Physiologists were held December 16. Col. Paul A. Campbell presented the certificates. The course in aviation physiology is of five weeks' duration and treats of the effects of lowered barometric pressure on personnel, anoxia and the effects of flight on man, the operation of low pressure chambers, the theory and practical use of oxygen equipment and the conduct of high altitude indoctrination and classification.

ARMY AWARDS AND COMMENDATIONS

Captain Seymour Reissman

Capt. Seymour Reissman, formerly of Brooklyn, was recently awarded the Bronze Star Medal "for heroic action near — on July 19, 1943. Captain Reissman and his crew dismounted from their medical half track to inspect the vehicle when enemy artillery fire started falling approximately 200 yards away. All of the personnel immediately took cover. When it became apparent that the fire was creeping toward the half track and would destroy it if it was not moved, Captain Reissman promptly and with complete disregard for his own safety ran to his vehicle and, on foot, guided his driver in backing the vehicle approximately 100 yards to a position of safety. During this time artillery fire was falling on both sides of the road opposite the half track. The immediate and courageous action on the part of Captain Reissman undoubtedly saved the vehicle from destruction and reflects high credit on himself and on the military service." Dr. Reissman graduated from the Long Island College of Medicine, Brooklyn, in 1938 and entered the service Oct. 25, 1940.

Captain Maurice Stamler

The Bronze Star Medal was recently awarded to Capt. Maurice Stamler, formerly of Beardstown, Ill. The citation read "On Oct. 26, 1943 in Italy he moved through an enemy artillery concentration which was falling at the rate of eight rounds per minute to the aid of three seriously wounded infantrymen who had been struck by fragments of an enemy shell. Arriving some time before his ambulance he worked forty-five minutes with enemy shells bursting within 50 yards of him, administering aid to these wounded men. On arrival of the ambulance after the enemy artillery fire had ceased he directed their evacuation. His utter disregard for personal safety in this gallant action is deserving of the highest praise." Dr. Stamler graduated from the University of Illinois College of Medicine, Chicago, in 1934 and entered the service Aug. 21, 1941.

Captain Roy E. Hanford

Capt. Roy E. Hanford, formerly of Sandpoint, Idaho, has been awarded the Bronze Star Medal. The citation accompanying the award reads "During an intense enemy artillery barrage on April 6, 1944 near Anzio, Italy, a detachment tent of a hospital was struck by an enemy shell. With other medical officers who were on duty with him at an adjacent hospital he immediately rushed to the scene of the shelling and administered treatment to a number of seriously wounded soldiers. Although the area was under continuous bombardment they remained at the perilous task of rendering medical aid and expediting the quick removal of casualties for additional treatment. Their heroic performance reflects the finest traditions of the Medical Corps." Dr. Hanford graduated from Northwestern University Medical School, Chicago, in 1941 and entered the service July 1, 1942.

Captain Isbin S. Giddens

The Bronze Star Medal was recently awarded to Capt. Isbin S. Giddens, formerly of Ray City, Ga., whose citation declared that "at New Georgia Island, Solomon Islands, he demonstrated an untiring devotion to duty, high personal courage and a marked degree of professional skill when by prompt action and efficient surgery he saved the life of a soldier who was seriously wounded. He traversed 400 yards of terrain covered by hostile fire to reach the stricken man and, working

in a slit trench during a heavy rain, performed a most difficult suture of the jugular vein. Because the soldier was too weak to move, Captain Giddens remained with him throughout the night, evacuating him the following morning." Dr. Giddens graduated from the University of Georgia School of Medicine, Augusta, in 1933 and entered the service Oct. 19, 1941.

Captain Mark M. Pomaranc

Capt. Mark M. Pomaranc, formerly of Chicago, was recently awarded the Bronze Star Medal. The citation read "At Dutch New Guinea, from April 20 to June 12, 1944, he distinguished himself in the performance of his duty as surgeon of a task force. His untiring efforts in administering to the sick and wounded at advance outposts was a direct contribution to the high combat efficiency of the patrols. Working under hardships in combating jungle diseases, handicapped by supply, evacuation and communication problems, he succeeded in maintaining a high standard of health and sanitation." Dr. Pomaranc graduated from Northwestern University Medical School, Chicago, in 1941 and entered the service Jan. 5, 1942.

Major Martin R. Wisely

The Silver Star Medal was recently awarded to Major Martin R. Wisely, formerly of Edenton, N. C., whose citation declared that "on June 11, 1944 near Carentan, France, while his organization was pinned down by intense enemy machine gun and mortar fire, he, with complete disregard for his personal safety, moved in to the front lines, administering first aid and removing the wounded, thereby saving the lives of many

wounded soldiers. His conduct was in accordance with the highest standards of military service." Dr. Wisely graduated from the University of Virginia Department of Medicine, Charlottesville, in 1935 and entered the service Sept. 16, 1940.

Lieutenant Colonel Ben L. Pentecost

The Soldier's Medal was recently awarded to Lieut. Col. Ben L. Pentecost, formerly of Memphis, for "extraordinary heroism" in a bomber crash on September 3. While rendering first aid, part of the bomb load exploded. Injured, he continued to give medical aid, although not all of the bombs had exploded. "The performance of his duties in the face of unknown dangers reflects the highest credit on this officer and the armed forces of the United States." Dr. Pentecost graduated from the University of Tennessee College of Medicine, Memphis, in 1935 and entered the service Feb. 1, 1941.

Captain Jacob Schnitman

An award of the Bronze Star Medal was recently made to Capt. Jacob Schnitman, formerly of Brooklyn, for meritorious service in combat as a battalion surgeon in Italy, Sept. 10, 1943 to April 16, 1944. The citation reads "By his prompt and efficient treatment of wounded, Captain Schnitman saved countless lives and reduced materially the morbidity and mortality rate. Through his efforts a high degree of combat efficiency has been achieved in his medical detachment." Dr. Schnitman graduated from the University of Basel Faculty of Medicine, Basel, Switzerland, in 1936 and entered the service March 5, 1941.

NAVY

V-12 PROGRAM OF THE NAVY

The Navy has announced that its V-12 program, beginning Nov. 1, 1944, is limited to approximately 1,000 enlisted men from the ranks selected under the program. No trainees from civil life or from the military service will enter the Navy V-12 (college program) in the term starting March 1, 1945. Students already enrolled in the V-12 program under contract to the Navy will continue their training as scheduled. The decision to eliminate any input on March 1, 1945 is the result of the Navy's estimate of its future officer requirements. There are now 69,000 prospective young officers in training in the Navy's V-12 program. Additional examinations will not be held for candidates who desire to follow a premedical course.

CHANGE IN COMMAND AT NAVAL MEDICAL SCHOOL

Capt. Herbert L. Pugh (MC), U.S.N., recently assumed the post of medical officer in command at the Naval Medical School, Bethesda, Md., as relief for Capt. Paul W. Wilson (MC), U.S.N. Prior to his present assignment Dr. Pugh was chief of surgery at the U. S. Naval Hospital, San Diego, Calif. He graduated from the University of Virginia Department of Medicine, Charlottesville, in 1923 and was commissioned a lieutenant (junior grade) in the Medical Corps in 1923 and since that time has had many varied tours of duty both ashore and afloat.

APPOINT PSYCHIATRY EXAMINER

Comdr. F. J. Braeland (MC), U.S.N.R., Neuropsychiatry Branch, Professional Division, Bureau of Medicine and Surgery, has been appointed an examiner on the American Board of Psychiatry. He attended board meetings in New York recently to examine candidates for certification as specialists in psychiatry.

LIEUTENANT COMMANDER WAYNE H. STEWART MISSING IN ACTION

Lieut. Comdr. Wayne H. Stewart, U.S.N.R., formerly of Coraopolis, Pa., has been reported missing in action. Dr. Stewart graduated from the University of Pittsburgh School of Medicine in 1933. He entered the service Nov. 5, 1940.

FIRST SUBMARINE SURGEON

Lieut. Comdr. William S. Francis, formerly of Washington, D. C., is believed to be the first navy doctor to wear both the wings of a flight surgeon and the dolphins of a submarine surgeon. He was, in fact, the first submarine surgeon, for he was appointed the nucleus of a board to qualify other navy doctors for that designation. He recently completed his courses in flight surgery at the Naval Air Training Bases, Pensacola, Fla., and is awaiting assignment. After the United States declared war he was assigned to duty in the South Pacific as a submarine surgeon and there saw activity in the preventive branch of medicine in connection with submarine warfare, salvage operations and rescue work. His duty in the twenty-six months he was in the Pacific area included assignments in the vicinity of Guadalcanal and Tulagi, Hawaii and the Aleutians. In August of 1944 he arrived at Pensacola for training as a flight surgeon. Dr. Francis graduated from Tulane University of Louisiana School of Medicine, New Orleans, in 1935 and entered the service Aug. 19, 1937.

MASS CHEMOPROPHYLAXIS AT ALL NAVAL TRAINING STATIONS

Capt. T. J. Carter (MC), U.S.N., chief of the Division of Preventive Medicine, Bureau of Medicine and Surgery, recently stated that as a result of "the largest controlled experiment in the history of medicine" mass chemoprophylaxis against respiratory diseases caused by streptococcal infections has been instituted at all naval training stations. Dr. Carter stated that in 1943 mass chemoprophylaxis involving a million men was undertaken in selected stations on a controlled basis, the result of which was very successful. "At one station the rate of admission for scarlet fever varied from 63.5 per thousand to 171.6 per thousand during the observation period before the use of sulfadiazine. Following the institution of the prophylaxis, the rate fell to zero within two weeks. . . . Tonsillitis at this same station fell from 426 per thousand to 46 per thousand. Rheumatic fever, the most serious of the infections associated with the streptococcus organism because of the heart involvement, was reduced from 87 per thousand to zero within four weeks." Dr. Carter estimated that the experiment alone saved over a million man-days for medical personnel and between 50 and 100 million dollars.

FOUR NAVAL HOSPITALS TO HAVE OCULAR PROSTHETIC UNITS

Expansion of facilities for production of the new acrylic resin artificial eyes developed at the Naval Dental School, Bethesda, Md., recently began with the assignment of four dental officers to the naval hospitals at San Diego and Oakland, Calif., Seattle and Philadelphia. The dental officers will have completed a course in production of the eyes and are assigned to hospitals which already have dental prosthetic units. At the same time four other dental officers were assigned to the course and ten Waves and two enlisted men began special training in painting and coloring the eyes at the Naval Dental School. On completion of the course the enlisted personnel will be assigned to the aforementioned hospitals to assist the dental officers. Each of the hospitals designated will establish maxillofacial (ocular) units in connection with their dental prosthetic facilities.

NAVY AWARDS AND COMMENDATIONS

Lieutenant Irad B. Hardy Jr.

The Navy and Marine Corps Medal was recently awarded to Lieut. Irad B. Hardy Jr., formerly of Boston. Accompanying the award was the following citation, signed by Admiral Chester W. Nimitz: "For extraordinary heroism while serving against enemy Japanese forces on Kwajalein atoll, Marshall Islands, on Jan. 31, 1944. During the early stages of the battle, three LVT's (amphibious tractors) carrying him and forty Marines

capsized on a reef. He, although narrowly escaping death himself, repeatedly swam through the surf, pulling injured and dazed men to a channel marker. After all but seven of the men had reached this point of comparative safety, he, at the risk of his own life, dauntlessly set out over treacherous, submerged reefs for a grounded LCI (landing craft, infantry), which was approximately 200 yards away. He obtained a line from the LCI and courageously brought it back to the men precariously stranded on the marker. He then, although exhausted, directed and assisted the injured men to safety aboard the LCI. By his great personal valor, aggressive leadership and fearless devotion to duty, he saved many lives. His conduct throughout was in keeping with the highest traditions of the Naval Service." Dr. Hardy graduated from Harvard Medical School, Boston, in 1938 and entered the service Sept. 7, 1942.

Lieutenant Peter T. Brooks

Lieut. Peter T. Brooks, formerly of Boston, was recently commended for outstanding services as set forth in the following citation: "For outstanding services rendered to war casualties at Saipan Island, incident to the invasion of that island, June 15-22, 1944. As a medical officer serving aboard an attack transport ship, he worked skillfully and tirelessly administering to wounded men evacuated from the combat zone. His professional skill and steadfast devotion to duty were responsible for saving many lives and were in keeping with the highest tradition of the naval service." Dr. Brooks graduated from Columbia University College of Physicians and Surgeons, New York, in 1942 and entered the service April 15, 1943.

MISCELLANEOUS

AMERICAN LEGION PLANS PROGRAM FOR MEDICAL SERVICE

The American Legion recently announced a program to mobilize the highest medical intelligence of America to advise on the mental and physical health needs of returning veterans. Nine eminent physicians and surgeons were named to a national board that will counsel the Legion in its service to discharged men. They are Col. Leonard G. Rowntree, chief of the selective service division and internationally known authority on glandular disturbances, named as chairman; Major Gen. George F. Lull, deputy surgeon general, U. S. Army, and Rear Admiral William C. Agnew, assistant surgeon general, U. S. Navy, both advisers in general medicine; Col. Esmond R. Long, Office of the Surgeon General, U. S. Army, adviser in pulmonary disease; Capt. Raymond C. Wells, U. S. Navy, assistant chief of the Selective Service Medical Division, adviser in dentistry; Lieut. Col. Louis H. Renfrow, executive officer, Selective Service Medical Division, as assistant chairman of the board; Lieut. Col. Charles W. Mayo, adviser in surgery; Dr. William D. Stroud, professor of cardiology, University of Pennsylvania, adviser in heart ailments, and Dr. Winfred Overholzer, superintendent of St. Elizabeths Hospital, Washington, D. C., adviser in psychiatry. Particular attention will be given by the board to the handling of psychoneurotic cases.

National Commander Edward N. Scheiberling stated that similar medical advisory groups are projected for each state, and it is planned, as the program progresses, to appoint post surgeons in each community having a Legion post.

NUTRITION LABORATORY NOW IN CHICAGO

The Medical Nutrition Laboratory, formerly part of the Army Medical School, Army Medical Center, Washington, D. C., has moved to 1849 West Pershing Road, Chicago 9. Capt. George Berryman, Sn. C., is the acting commanding officer, and Capt. Cyrus French, Sn. C., is executive officer. A new laboratory is being constructed, and the scope of the work will be increased. In addition to training nutrition officers there will be physiologic, chemical and bacteriologic studies made of nutritional problems pertaining to army personnel.

PENICILLIN TREATMENT OF YAWS

The Surgeon General's Office, in cooperation with the Office of the Coordinator of Inter-American Affairs and the Army Epidemiological Board, has organized a joint project in Haiti to study the effect of penicillin in the treatment and control of yaws. Yaws is endemic in certain sections of Haiti, and the large number of cases affords an excellent reservoir of clinical material for study. Lieut. Col. T. H. Sternberg, director, Venereal Disease Control Division, Preventive Medicine Service, Office of the Surgeon General, who has had considerable experience with penicillin, went to Haiti this month to cooperate with the American Sanitary Mission of CIAA under the direction of Lieut. Col. James H. Dwinelle, chief of party, in initiating the project there. He was accompanied by Major Charles R. Rein, serologist from the Army Medical School. The following week Brig. Gen. James S. Simmons, chief of preventive medicine service, and Major Douglass W. Walker, executive officer, visited the group in Haiti to observe the progress of the project and to assist in the development of plans for its continuation. Also with the group in Haiti were Capt. Ralph P. Creer of the medical administrative corps and Corp. Bruno Miekleit of the Medical Arts Service of the Army Medical Museum.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, December 30, page 1157)

MASSACHUSETTS

New England Hospital for Women and Children, Boston. Capacity, 260; admissions, 4,033. Miss Josephine A. Mulville, R.N., Superintendent (6 interns, 1 resident, all women).

NEW YORK

Hospital for Joint Diseases, New York City. Capacity, 362; admissions, 5,311. Dr. J. J. Golub, Director (8 interns, July, August, September, October).

Mount Sinai Hospital, New York City. Capacity, 853; admissions, 14,534. Dr. Joseph Turner, Director (2 residents—otology).

OREGON

Emanuel Hospital, Portland. Capacity, 425; admissions, 11,532. A. L. Morland, Superintendent (2 residents).

SECOND SESSION, FRIDAY AFTERNOON

DR. D. L. CANNON, Montgomery, Ala., Presiding

The Red Cross Blood Procurement Program

DR. OLIN WEST, Chicago: We have here today, as representatives of the American Red Cross, Dr. G. F. McGinnes, who is the medical director of the Red Cross, and Dr. G. Canby Robinson, who has had a large part to play in the establishment of blood banks. They want to get such suggestions and advice as you may be willing to offer as to the program that the Red Cross should adopt and carry forward in the matter of the collection of blood and in the preparation and distribution of plasma.

DR. G. FOARD MCGINNES, Washington, D. C.: All of you are familiar with the Red Cross blood procurement program for the armed forces. Some are probably familiar with the civilian program which we have carried on during the war at the request of certain communities and states to furnish blood donors for civilian purposes. During the past few months our chapters have had requests to continue into some sort of program of blood or donor procurement following the war. It was our thinking that we should consider these requests and, if the Red Cross is to continue in this field, work out some program before our war program ceases. It was brought to the attention of our National Medical Advisory Committee for suggestions. It was its thinking and our thinking that the Red Cross should go into such a program if there is a need. It was our thinking further that before we developed any definite plans we should have the advice and guidance of organized medicine through the American Medical Association and of the state official health agencies through the Association of State and Territorial Health Officers; therefore we met with the Board of Trustees of this Association and at its invitation we are meeting with you today. We have also met with the Association of State Health Officers. We will later discuss this formally or informally with the American Hospital Association. The purpose of this discussion is to get your suggestions and advice regarding the participation of the American National Red Cross in a donor procurement program to meet civilian needs in peacetimes. However, I will appreciate it if Dr. G. Canby Robinson, who is director of our national blood donor program, will give a few of the pros and cons regarding our program. As you know, Dr. Robinson has probably had more experience in this field than any other man has ever had and I certainly hope will ever have in the future.

DR. G. CANBY ROBINSON, Baltimore: The Red Cross has an organization including 3,778 chapters that are organized on a community and county basis. The Red Cross has a rather extensive experience in recruiting blood donors and in the administration of blood donor centers during the war. It is a question as to how this experience may best be employed on a peacetime activity. There has been much enthusiasm and interest developing in a number of localities and cities and communities in regard to having blood and blood derivatives available for the civilian population. The Red Cross chapters are being asked to participate. This program as it seems to be developing may be statewide, it may be communitywide or even projects that involve only a single hospital are suggested. In some instances the local medical societies may sponsor such programs, and in other instances state or municipal departments of health may have funds available for the support and may therefore develop blood and plasma transfusion programs as an official service. The blood donor service, which was instituted at the request of the Surgeons General of the Army and the Navy, is a joint project in which the Red Cross and the Division of Medical Sciences and the National Research Council participate. The technical aspects have been controlled by a small committee of the National Research Council. The Red Cross has not had the responsibility of formulating the technical operations, and the Red Cross does not intend to engage in any such technical operations in the future. Now the relation of the Red Cross to these projects presents two somewhat opposed considerations. The Red Cross desires to serve the public through its chapters in matters of the relief of suffering and the promotion of health and in so doing show itself worthy of the social, spiritual and financial support of the public. Within the limits of its function

as set forth by its Congressional charter, the American Red Cross serves the people of this country in times of peace as well as in times of war. It is anxious to respond through its national organization and its chapters to any worthy public demand for a type of service that falls within the fields of its activities. On the other hand, the Red Cross is mindful of the serious responsibility it assumes in participating in any blood or plasma transfusion program which deals with very serious matters of life and death. In recruiting volunteer donors the Red Cross is concerned with and has the responsibility for their safe and treatment as individuals: the technical standards used in procuring their blood, the care with which the blood is handled and conceived, the proper distribution and use of the blood and observance of all understandings of donors in regard to the charges to be made for its use. The Red Cross is supported by voluntary contributions, and the type of service, the type of reputation and the type of public relations that are maintained determines quite a great deal the public support that the Red Cross has. In all the discussions we should like to have you bear in mind that, although the Red Cross is extremely anxious to do a public service, if there is a need and if the profession feels that it should be done, it must have your consideration and your sympathetic understanding of the problems that are involved when it undertakes the enrollment of donors. We have had three responsibilities before us all the time in the Red Cross blood donor service, the first being the protection of the donor, the second the protection of the blood that is donated and the third the protection of the Red Cross money. We put the third, because our primary responsibility has been the protection of the donor. We are proud of the fact that we have bled 4 or 5 million people and obtained over 10 million pints of blood with an extremely small percentage of accidents and difficulties. The American public is now educated to the value or to the ease, you might say, of giving a pint of blood and the relative safety with which it may be done. We are convinced that the public will respond to any well organized service for the supply of human blood for civilian needs, and the Red Cross hopes that all the organizations with which it cooperates can be standardized, if we can use that word, or will maintain such good standards of technique and of distribution and of ethical treatment of the whole matter that the Red Cross can go along with these projects.

DISCUSSION

DR. MICHAEL A. TIGHE, Boston: Many of our communities have set up one or two blood banks in the hospitals in those communities. What consideration does the Red Cross intend to give to these blood banks that are already set up for the purpose of meeting civilian needs?

DR. CREIGHTON BARKER, New Haven, Conn.: The Connecticut State Medical Society recognizes the need for the project that Dr. Robinson has outlined—the continuance of a community blood service after the war. Our society at its meeting late in the summer appointed a committee on statewide blood bank for the express purpose of exploring the possibilities of continuing the operation of the blood bank in our state, which has been operated in cooperation with the Red Cross and, I should like to say, in a highly satisfactory manner to us. That association has been pleasant, productive and valuable. About ten days ago we had a meeting with the board of trustees, or a similar body, including the president of the Red Cross chapter where the operation has been centralized in Hartford during the war period, for the express purpose of discussing the problem that is now presented to us, as to how we could as a state medical society on the one hand and the local Red Cross chapters on the other hand continue this useful service. It was our tentative opinion at that time, which received general agreement from the physicians who were present as well as the gentleman from the Red Cross Board, that the technical service should be done by an organization other than the Red Cross, that is, a committee, an operating group, from the state medical society. It would, in fact, be the same individuals who have been carrying on the job for the last three years, with the exception of the loss of one or two naval medical officers who have been temporarily assigned to our program. That personnel is willing and anxious to continue to do it. The gentleman from the Red Cross was of the opinion that perhaps the most useful

thing the Red Cross might do would be, as Dr. Robinson has proposed, the recruiting of donors and certain administrative procedures apart from the technical procedures. As to just how this technical group is to be operated and financed, the answer is not clear as yet. However, it appears that we shall be able to work out the financing of this central blood bank or this blood donor service in cooperation with hospitals. Particularly our small hospitals need this service. I should like to have you know that we are alert to this opportunity for usefulness, and I have an idea that we are going to do it and we should like to have your help.

DR. W. L. BIERING, Des Moines, Iowa: As the Iowa state commissioner of health, I should like to offer the following comments: In this blood bank program for peacetime I feel that there should be first a close cooperation between the Red Cross and the state health agency. In the distribution of the service that seems to be the logical state agency. I feel that at least in states of a certain size it is the logical function of the state department of health to process the blood plasma or other substitutes of whole blood for transfusion purposes for the entire state. Speaking from an experience of four or five years largely in the processing of pooled convalescent serum for scarlet fever, measles and whooping cough, and three years of experience in the processing of blood plasma, pooled blood serum and other substitutes and of distributing these units throughout the hospitals of the state, we have received the fullest cooperation on the part of hospitals as well as of all the local medical societies, and it is my feeling that that is a logical function of a state health department. We are requesting from the next legislature the building of a special laboratory building so that we shall be able to process blood plasma for the entire state, and it is our hope that we can cooperate fully with the Red Cross, because it is most valuable in the enrolment of donors, in carrying out various arrangements that are necessary and in providing the mobile collecting unit. We have the best type of facilities for processing pooled blood, collecting blood from hospitals and then processing it for them, possibly at cost price in some instances. It would be our thought that blood plasma or its substitute should be made available to every person in a community. If there are contributions from those who are economically able, that will help in maintaining the cost of the central unit. I should like, furthermore, to call attention to the rather remarkable way in which blood collection has been carried on by the Red Cross for war purposes: the arrangement of a suitable place for collection, having a courteous attendant who gets their names, having a physician present to make at least a general examination, listing the age of the donors and then serving them with coffee and sandwiches or some slight repast, giving them an opportunity to lie down for a half hour or an hour, and making them go away from the central station with the feeling that they have really done something, that they have contributed something to their country and in the future to their community. I feel that there is a psychological side to this. You must have the cooperation of the donor. In certain instances in the past we have paid donors, but I think in the future that will not be necessary. However, I am sure that a coordinated program on a statewide basis in states of a certain size is the logical procedure to carry on. At least that is what we hope to do. I understand that Michigan is going to follow out the same plan.

DR. L. W. MASON, Denver: I am glad for this opportunity to say just a few words about a civilian blood bank which we have in Colorado. This bank was begun about two years ago, and it has been in operation for something over a year and a half with funds supplied by Helen Bonfils in memory of her mother, Belle Bonfils, who was the widow of the founder of the Denver Post. If there are persons in one's community with a considerable amount of money, I am sure that nothing would appeal to them more than to give money for the establishment of a civilian blood bank. The name of this bank is the Belle Bonfils Memorial Blood Bank. The technical work is done at the Medical School at the University of Colorado, in the department of clinical pathology. There is a full time technical director, Dr. Marion Rymer, who has charge of it. There was a little difficulty, of course, at first in getting a suitable number of donors to get it started. As far as I know it has not inter-

fered with the Red Cross blood bank for war purposes which we have there and which has always met its quotas without any difficulty. One interesting thing about this in particular that I thought might be of value to those of you who might be contemplating initiating such a project in your own community is the way in which the donor clientele has been built up. At first the plasma was kept at the medical school and dispensed from there. A little later, as the bank grew, plasma depots were established in all the private hospitals in Denver as well as in the county hospital. At present depots are established all over Colorado, so that there is no place in the state from which plasma cannot be obtained in a short time in an emergency. I think there is a tremendous need to continue this activity after the war is over. It isn't always possible immediately to get a donor and to get patients transfused with whole blood, in obstetric accidents, for example, or in industrial accidents, where there has been considerable use of whole blood and plasma. Now the interesting way in which the donor clientele has been built up in Colorado is this: Any doctor in the state is entitled to draw on the blood bank for whatever plasma he needs whether it is 250, 500 or 1,000 cc. or more. The one who gets the plasma is obligated to see that friends or relatives, three of them, report to the blood bank at some time in the future as donors. Of course, not all of them do that, but I presume that 90 per cent have done so. No charge whatever is made to any patient, whether he is indigent or a millionaire, for use of the plasma. The payment is in further donors of more blood or more plasma. That civilian bank has grown. It is entirely successful and, of course, it has been a godsend to doctors who need plasma in a hurry. All the private hospitals can get it at a moment's notice and it is now distributed over the state, so that these centers all over the state are within accessible distance to any doctor in Colorado.

DR. ROBERT McIVER, Jacksonville, Fla.: I should like to ask Dr. Robinson if at the present time the armed services will accept plasma from civilian blood banks. At one time they would not and I had some correspondence with Davis and a very nice letter from Dr. Robinson about it, but they were not able to accept the plasma from the bank, and that led us into this rather unfortunate situation that I believe could have been avoided had the armed forces accepted even a token amount of plasma from the civilian bank. When we were not able to tell people who were giving blood that we were sending it abroad a great many lost interest, even though we offered blood and plasma to the armed services in our vicinity and it was accepted. We processed blood, for instance, for the naval dispensary at the air base, technically phrased, in containers furnished by the Navy, and we had fine cooperation there. We had a lot of donors from the base and we sent a good deal of plasma out to the base and that worked out fine. I was interested in what the doctor from Colorado said about a fund or an endowment that would take care of the finances and we did not have to extract from the recipients of this service any fee. Our first fee was \$3 when we were financed by the Civilian Defense. They gave us about \$1,000 a month, and we made a token charge of \$3 to cover expendable material, not as a service fee at all. Now the Civilian Defense has withdrawn that support and the blood bank has become an independent institution and it is financing itself by a service charge of \$10. I believe that if the Red Cross would, in civilian life, bring up the donor problem and keep feeding it, it would be all right provided no charge was made for any of the service anywhere along the line. We use the same system that is used in Colorado. We give the blood out on the call of any doctor in any amount that he needs. We do not expect anything for it right then, but we hold the doctor responsible for the donor replacement. I am sorry to say that ours has not been anything like 90 per cent. Most of our doctors are in the red, and we have to keep on having revivals and talks to get them to spruce up and get the donors. In spite of the fact that some are deeply in the red, we continue to give them any and all of the blood or plasma that they need on call. All of it is deposited in all the hospitals. The bank is established as an independent institution not for profit, incorporated. It is self supporting. All of the personnel are full time, and all of the directors serve without pay and the plasma is kept in all the hospitals. We have a separate white and colored bank, being from the Deep South. The colored

hospitals have plasma on storage and the blood is sent on call. All of the work, from the typing to the delivery of the blood and plasma and the apparatus to give it, is the responsibility of the bank and it is all done at the bank.

DR. W. F. DONALDSON, Pittsburgh: Before the war, as a matter of fact through the Committee for the Control of Acute Appendicitis Mortality of our state medical society, we interested the health department of the state in the establishment of a mobile laboratory and visited all of the small hospitals in the state that would guarantee a certain number of donors to be on hand the day the mobile unit arrived. This blood was taken back to Philadelphia and processed and about 90 per cent of it returned to each hospital, probably 10 per cent being held in a common fund. It was then returned to the hospital, at a price of \$3.75 for each pint, with the understanding that no charge would be made for the use of that blood plasma.

DR. HOLMAN TAYLOR, Fort Worth, Texas: I see no reason in the world why the American Red Cross should not continue as a peacetime occupation its blood donor service, which it has done so successfully during the war, provided it continues its policy of cooperating rather than supplanting agencies that are working along that line. It occurs to me that the name of the Red Cross will go far toward getting blood donors where the use of various revivals in the interest of local enterprises might fail. In Texas there are two well established, relatively long established, blood banks, one conducted by the state health department in its excellent laboratories, and the other a private, nonprofit enterprise in the city of Dallas by Dr. Hill. Now if the Red Cross should go down there in Texas and cooperate with the state health department and cooperate with that blood bank in Dallas, it would be helping and they might need its services. They might not, but at any rate the cooperation wouldn't harm. But I think it would be a mistake to try to supplant that service. Dr. Hill's blood bank in Dallas is nonprofit, as I say. They make a charge of \$5, I believe, and a replacement of the blood when the blood is given for private use. That is to cover the overhead and, as the overhead is reduced, that charge is reduced also. The great open spaces in Texas cannot furnish that kind of service and therein lies the great opportunity of the Red Cross, and there is no reason I can see why we should not approve of the idea. The Red Cross must have work to do in the interim between wars in order to maintain at least a skeletonized organization, else it will not be ready when war comes.

DR. G. CANBY ROBINSON, Baltimore: Dr. Mason's account brings up the question Is the Red Cross needed or necessary to carry on blood banks on a state-community basis? Dr. McIver's question about the use of blood for the armed forces from other than Red Cross blood donor centers has been one that we have had to face many times, and it has been one of a good deal of embarrassment. We gather the blood and turn it into the laboratories. Now the question is May any other agency gather blood and turn it into the laboratories? I can say that it is illegal from this sense: The laboratories are licensed by the National Institute of Health of the Public Health Service. That license has a legal standing and that license extends into the procurement. Our centers are inspected by the laboratories and by the National Institute of Health to see that we are carrying out the whole technical procedure according to the specifications of the National Institute of Health and are fulfilling the licensing certificate. So that it is impossible for the laboratories to receive blood from private or other agencies for processing for the Army and the Navy to be shipped overseas. There have been several instances in which the local blood bank has fulfilled a need of a local military establishment, such as Dr. McIver has mentioned, but that is not quite the same as sending the blood into the whole great pool for processing. The Army and the Navy, as a matter of fact, have taken some steps to have blood and plasma available for these local establishments, so that they will not have to call on the local banks. I think, however, the local bank that has been in a position to give that service has rendered a great service. But it has not been possible for the Army and the Navy program to take blood in this processing and sending overseas except that which has been secured through the Red Cross blood donor service.

DR. G. FOARD MCGINNES, Washington, D. C.: The first program which the Red Cross chapters cooperated with was in 1936 in Augusta, Ga. That program received a great deal of national publicity. Following that, for the next few years, about ten Red Cross chapters participated in some type of blood procurement program. It was never extensive, but that program did lead to our present national program for the armed forces. Dr. Bierring mentioned the statewide program as he anticipated it in Iowa. I might say that Michigan already has a statewide program, which is carried on under the auspices of the state health department with an appropriation from the state legislature. The Red Cross is now cooperating with that program. We are the donor procurement agency throughout the state of Michigan and that program is going along nicely. We are familiar with the Pennsylvania program. It is a program that has been carried on by the state health department for a long time, in which it furnishes blood to the various hospitals throughout the state with a replacement program. We are familiar with the program now being carried on in Texas both by the state health department and by Dr. Hill in Dallas. The state health department has a good processing unit at present and is carrying on. It has requested the Red Cross to participate in the program and we have already through a few of our chapters, but more recently they have asked us to cooperate with them on a statewide basis. Several states, think now something like six, have asked us to cooperate with them in peacetime, but we do not have a peacetime program so no answers have been given to them. In Iowa we are also cooperating through some of our local chapters with the state program. So we have had a permissible program for our chapters to participate in community and state programs during the war.

[NOTE.—By a show of hands those present unanimously approved participation by the Red Cross in a peacetime blood procurement program.]

THE PHYSICIAN'S ATTITUDE TOWARD THE EMERGENCY MATERNITY AND INFANT CARE (EMIC) PROGRAM

E. D. Plass, M.D., Iowa City

No single recent development has so disturbed our profession as has the inauguration and expansion of the federal government's program to provide medical care for the pregnant wives and young children of enlisted men of the lowest four grades. The ill advised placing of the project under the Children's Bureau and the regulatory measures devised by that group have given substance to the specter of "state medicine" and have alarmed the profession. Organized medical groups have almost without exception condemned the program but have cooperated from a sense of patriotic duty, a situation which may well have been envisioned by those who maneuvered the Congress into taking the actions it did and the profession into an intolerable dilemma. The result has been an unprecedented confusion of thought and emotion, which has led nowhere in particular. We have blamed the bureau when we should have put the responsibility on the Congress, we have fought against minor inconveniences and inequalities but largely ignored the fundamental issues and we have wasted our time on resolutions when resolute action offered the only chance for relief.

Many of us have failed to see the forest for the trees and have spent our energies criticizing the bureau for regulations actually demanded by the actions of the Congress under which the bureau operates. This is not to say that the bureau is blameless but rather to imply that the Congress should bear the major portion of the blame for playing deliberately into the hands of those in the official Washington family who admittedly want to socialize medical practice or for failing to recognize that the mandates it gave the bureau were too general and would lead to an onerous form of regimentation. There is little doubt that the bureau built up a small and local need to a near national catastrophe and sufficiently impressed a Congress which wanted naturally to do everything reasonable for our fighting men. The charge that the bureau had no statutory sanction for its incursion into the field of medical care is not strictly

true, since it was the agency to which the funds for the program were allocated by the appropriations, but the history of the bureau does show that such a function was never proposed until the present "emergency" arose. The act creating the bureau, passed on April 9, 1912, limits its functions to investigating and publishing the results of investigations on a variety of factors affecting children, among which "questions of infant mortality," "the birth rate" and "accidents and diseases of children" alone have direct medical implications. The assistant chief of the bureau has implied that the Social Security Act of 1935 considerably extended the scope of the bureau's recognized functions, but this legislation appears only to provide for "the development of demonstration services in needy areas and among groups in special need."

It seems clear that the bureau has for the past eight or ten years, at least, been making efforts to enter the field of medical care. In 1936, soon after passage of the Social Security Act, a few "demonstration areas" were organized, wherein physicians were paid for providing antepartum care and public health nurses were employed to assist the physicians in the care of mothers and children. Evidently the original small EMIC project in the Pacific Northwest was designated a "demonstration" and as such not inconsistent with the established statutory functions of the bureau. Some observers wonder whether the "foot in the door" was placed there under strictly humanitarian motives or whether it was the opening that had been awaited for years and which had to be exploited quickly. Subsequent events suggest the latter, and it was cleverly done.

Slightly more than three years ago the commandant at Fort Lewis requested the Washington State Health Department to assist in obtaining maternity care for the wives of enlisted men at that post, since the facilities of the station hospital had become inadequate and the county hospitals could not admit non-residents. The health department soon exhausted its available funds and appealed to the Children's Bureau, which met the emergency from unexpended sums in its budget. It should be noted that the program was started on the basis of need, while now the bureau is stressing the point that no "means test" can be applied. "Need" was essential for establishing a "demonstration area"; but with the program expanded to the four corners of the country there was no need for "need." The service was widely publicized in the public press and has been advertised through special notices distributed with allotment checks. The latest such leaflet reads "If your husband is in the 4th, 5th, 6th or 7th grade (the lowest four enlisted grades) of the Army, Navy, Marine Corps or Coast Guard, or if he is an aviation cadet, you are entitled to medical, nursing and hospital care, where it is available, throughout your pregnancy, at childbirth and for six weeks after." "The care will cost you or your husband nothing. No questions are asked about your income."

The initial deficiency appropriation measure specifically authorizing the Children's Bureau to undertake the emergency maternity and infant care program made such assistance available only when "similar care was not available from the medical and hospital facilities of the Army and/or Navy. . . ." The bureau, even in its early interpretative publications, changed this to read "Similar service is not readily available (without financial investigation and without cost) from the medical personnel or hospitals of the United States Army, Navy, Public Health Service or from clinics or conferences or other services provided by or through state or local public health agencies. . . ." That policy has the earmarks of an emergency setup until it is realized that all charitable state and local medical services and hospitals demand a "means test" and that the availability of services in governmental hospitals is determined by the commanding officers. For the past two or three years many city, county and state general hospitals have been operating far under capacity, as is usually true in periods of full employment and high wages. And yet these facilities and the medical personnel to operate them cannot be used to full advantage in meeting the "emergency" because of the bureau's insistence that no "means test" be applied. On the other hand, some private hospitals are being seriously inconvenienced by the demands of the wives of service men, who want care under the EMIC program and insist on the full fourteen days hospitalization offered them by its provisions. The philosophy involved in the

contention that a gift of medical and hospital attention is not "charity" if the funds derive from the federal treasury but is "charity" when financed by local or state taxes is consistent only with the other inconsistencies the bureau has thrown around the program for reasons best known to itself.

These developments indicative of the evident desire of the bureau's officials to participate in medical care on a large scale should be considered in light of the Report of the Interdepartmental Committee to Coordinate Health and Welfare Activities under the chairmanship of Josephine Roche, released on Jan. 23, 1939. This document contains the following pertinent statement: "The most serious deficiency in the present maternal and child health program is lack of provision for medical care for mothers and children who are so situated that they cannot obtain needed care without some form of assistance from the community." The Children's Bureau was represented on the committee, and the statement quoted surely would not have been included without their approval, and there is some reason for believing that it may have been included at their request. It appears likely that the bureau officials wanted to get their hands on medical practice, and it can at least be surmised that the "shoestring" relief affair developed in the state of Washington was expanded purposely so that the bureau would have a valid reason for appealing to the Congress for additional funds to be placed with the bureau for administration. At least, such an inference suggests why, early in 1942, several states were advised that they could have \$10,000 each, out of available funds amounting to \$198,000, for emergency care of the wives and children of service men who could not obtain such care because of nonresidency. In some states this offer was made at a time when it was not realized by the authorities that the states had such a problem. There is, of course, no good way of proving that these suspicions are entirely correct, but certainly the factual data advanced suggest that they are not too far wrong. Increasing sums were allotted to the various states on the basis of their probable needs for carrying out programs which they developed but which had to be cast in similar molds in order to win the approval of the chief of the Children's Bureau. The regulations developed by the bureau for the guidance of the various state health agencies had a certain elasticity in everything except the fundamental social philosophies involved. Experience with the functioning of the program has resulted in modification of many of its regulations, but not with the basic principles that especially concern the profession. It is this regimentation which has produced and stimulated the friction between the bureau and the majority of organized medical groups.

The most controversial issue is the method of payment, which, under the regulations, is made by the health agency directly to the physician, thus violating the supposedly sacred right of the medical man to make his own financial arrangements with his patients. Collectively, we object to this intervention of a third party, whoever it may be. The blame for this situation lies directly with the Congress, and the bureau is obviously carrying out a congressional mandate when it insists on direct payment. The record seems to indicate that the Congress had heard harrowing tales of men returning from World War I to find themselves deeply in debt for medical services rendered to their families while they were fighting our enemies. Undoubtedly there were also debts for other and less necessary things, but all the emphasis was placed on unpaid professional service and hospital bills, since they were seemingly unavoidable. A palpable flaw in this line of reasoning is apparent when it is remembered that the government is concerned only with bills for services rendered the enlisted man's wife while she is pregnant or within six weeks after delivery, and for the first year of his child's life. No provision is made for other and more catastrophic illness occurring outside these narrow limits. The Congress is said to have had in mind "the effect the assurance of such care would have on the morale and peace of mind of the enlisted man himself." Surely, debts for maternity and infant care cannot be the only ones which haunt the mind of the man overseas—they are no different from other debts; at least the accoucheur generally has no smaller percentage of uncollectable bills than practitioners in other lines. The whole thing suggests that the political aspects of the problem, and they are admittedly great, must have been given undue weight.

In any event, it can be safely assumed that our legislators were in no way solicitous for the obstetricians.

The second moot point involves the regimentation of these pregnant wives and young children of service men into one absolutely delimited class. They must obtain professional care and hospital service of a uniform financial pattern. They cannot rightfully pay any additional sum to the hospital in order to secure better accommodations than the ward service which is prescribed in the regulations nor can they pay, or the physician accept, more than the standard maximum fee for professional services. Moreover, the wife cannot accept professional care for herself or her child in a hospital without accepting such institutional care, or vice versa. It is an all or none proposition. The philosophy of such a regulation evidently stems from and is perhaps reasonably deduced from the action of Congress in demanding that payment be made directly to the physician and the hospital. That body wanted to protect the returning veteran from bills for medical services and hospital care contracted by his wife for luxury attention but was unconcerned about other extravagances which might well lead to even greater debt accumulations. Again the Congress appears to bear the responsibility for bringing about a situation which is irksome both to the profession and to the patient. The only answer that has been forthcoming is that the enlisted man's wife and child are under no obligation to request care under the program; if they do not like the provisions made available for them they are free to make their own arrangements, but by doing so they forfeit all claim for governmental assistance.

The third serious situation developed by the program is the scrapping of more than a decade of work by the bureau in developing standards for physicians who participate in such governmental projects. Previous smaller programs had limited participation to graduates of recognized medical schools. Even though such limitations may not have had statutory backing they had been made to stick, and attempts on the part of the irregulars to void them had been unsuccessful. Apparently, under congressional pressure of the cults the states have been compelled to accept requests from, and to make payments to, any one recognized as capable of giving obstetric care under their individual statutes. The Congress must likewise assume the responsibility for this threat to the quality of medical care and bear the burden for having discriminated against the wives and infant children of service men. Persistent efforts to obtain the passage of legislation making cultists eligible for the army and navy medical corps have resulted in failure, apparently because the legislators recognize the deficiencies of their training; but these same irregulars are fit to treat the wives and children. The Congress must take the blame. The one hope is that this program will end with the war emergency, as has been promised by several of those concerned with its administration, and that the old standards can not only be reestablished but even made more rigorous.

Up to this point it might seem that the bureau is not responsible for those fundamental concepts which have so aroused the profession, and it may be; but the possibility always remains that the administrative officials of the bureau influenced the Congress directly or through committee members to write the legislation as it was passed.

Until recent years the bureau had held to investigations and reports and to sponsoring and financing postgraduate courses in obstetrics and pediatrics and in so doing had gained the support and approval of the profession. The task set it under the public statutes would seem large enough to have occupied its personnel, but those in charge evidently saw in the situation created by the war a chance to experiment with medical practice under the guise of an emergency. Incidentally, the purposes outlined in its creating act have evidently been shelved and certain projects in those areas, such as the investigation of eclampsia, have been dropped in order that the office may devote its entire time and energy to implementing certain plans for regimenting the medical profession and a good portion of its maternity and pediatric clientele. And the assistant chief of the bureau has not hesitated to say in public that the experience gained in this experiment will be useful in the postwar years, while on another occasion she denied any thought of continuing the program after the war emergency has passed into history. The gradual inching of the bureau into the realm of medical care

and the inconsistencies of the public statements emanating from its higher officials, which are matters of historical fact, have been important factors in making the profession distrust the intentions of those in charge.

And this distrust is behind much of the professional opposition to the present EMIC program—the "emergency" did not ring true, the regimentative regulations have not struck a true democratic chord, and the bureau's insistence on the maintenance of those administrative principles which violate traditional medical philosophies have made many of its former friends fear that it may have had more than a passive role in determining the disruptive acts of Congress, which lie at the base of the disharmony existing between the bureau and the medical profession.

Physicians, individually and collectively, have always agreed that the wives and children of our fighting men should be adequately cared for, and that this care should extend not only to the period of pregnancy and six weeks after delivery or to the first year of life, as provided by the EMIC program, but even to the nonpregnant state and to children more than 1 year of age. No evidence has yet been adduced to show that the latter women and children have been neglected by the profession merely because no federal agency will pay the bills. In any one calendar year it is safe to say that not more than 10 per cent of the wives and children of enlisted men in the specified grades qualify for this attention. What happens to the other 90 per cent? Every one seems to have overlooked them and the fact that they may be ill. It would not be popular to tell this audience that they are being medically neglected—and it would not be true.

The more discussed but less important objections to the bureau's regulations concern chiefly such things as payment on a cash basis without regard for the complexity and duration of the medical problems involved, the uniformity of payment irrespective of the professional status or the overhead of the physician, the complexity of the required forms, the legal hazard in the approved contract form, the failure to make well baby care available and similar minutiae which have some present importance but no far reaching effects on the practice of medicine. The maximum fee of \$50 for complete obstetric care possibly tends to set a countrywide financial standard that will work a hardship on practitioners in the larger communities where operating overhead may exceed that figure, but on the other hand it definitely raises the fee in most small communities and in rural districts to a point which staggers the imagination of the physician who has done obstetrics all his life for \$15 to \$25. But even here the harassed practitioner is under no compulsion to accept the responsibilities for the care of wives of nonservice men for less than his regular figure. Fear of the charge of lack of patriotism, which has been such a potent lever in forcing the extension of the EMIC program, does not here enter the picture. Moreover, recent amendments to the regulations have met many of the aforementioned trivial objections by increasing the financial remuneration under certain specified conditions, a time honored and effective political maneuver, anticipated by those familiar with the bureau's machinations.

The bureau evidently has taken the attitude that it is wise to make minor financial concessions to pacify the majority of medical men, who think more of the present than of the future and who largely ignore the seriousness of those objections which were discussed earlier. Its officials insist that the bureau is merely following the congressional mandate in maintaining those concepts which have drawn the fire of organized medicine. It also seems clear that they will fight for their retention because they feel that this nation should have a federal health program which in the terms of the Interdepartmental Committee's report would provide both for the "self supporting" and for the "needy," and that the EMIC program is a proper experimental step in that direction.

Obviously, then, we should no longer waste our time and energy in representations to the bureau but should go to that higher authority, the Congress, from which the bureau obtains its power and funds. It is only from that body that we can hope for any relief, and many feel that that hope is very slight at best. It cannot be denied that sentiment for compulsory federalized health insurance is strong among our legislators

and that powerful political groups are applying pressure to have the next Congress consider the Murray-Wagner-Dingell bill, or some such inclusive proposal. If perchance the new legislature should veer away from the advanced social trends that are now dominating the thoughts of the powers in Washington, the time should be ripe for an attack on bureaucratic controls and for repeal of those provisions of the present statutes which made the physicians the pawns of governmental agencies.

Finally, the split personality of the medical profession must be introduced as a factor which may well decide the issue. Many thoughtful observers, even within the profession, see the quest of the almighty dollar, as expressed in unnecessary operations, needlessly prolonged and expensive treatments and costly diagnostic procedures as the basis for the current demand for a comprehensive national health service. The same monetary urge has made the physician oppose the EMIC program violently in his society meetings, even while he is accepting as many patients as come to him for care under its provisions. Unless and until we, as individuals and as groups, can decide whether we want freedom or domination, professional independence or official regimentation and develop a conviction which carries to our offices as well as to our society meetings, we cannot expect to wield the political force of which we are capable. And let us not forget that this is a political game and that the cards are being stacked against us even by our own activities. The bureau is under the control and direction of experienced and adroit politicians who are adept at exploiting divisions of opinion among its opponents. The personality rift that separates the physician in his office from the same individual in his society meetings offers the type of situation the politician desires. He assumes, and apparently quite correctly, that if he pacifies the former by increasing his fees he may largely ignore the other. The fact that the EMIC program is working so satisfactorily controverts our arguments that socialized medicine is inefficient and far below the standards set under private initiative. Moreover, let us keep in mind that 11,000,000 of our men are receiving better medical care, curative and preventive, than they have been accustomed to as civilians.

If now we still feel that we do not want any part of it, let us be realistic; let us unite and present our appeals for relief to the only group that can provide it, the Congress. Let each state or each group of states send its representatives to Washington to inform our representatives of our objections, and let us make those requests similar enough so that there can be no mistake about our desires. It is only in this way that we can hope to retain or to regain the national reputation and prestige the profession has so long enjoyed by reason of its humanitarian ambitions. By opposing the present program and its logical sequel, a national health service act, without offering another plan which will resolve the admitted inequalities of the present system of medical practice, we brand ourselves as nonprogressive reactionaries and still further lower ourselves in the eyes of the public. If we cannot unite in opposition to the present efforts to regiment the profession, let us continue to make the EMIC program work, and then let us cooperate with the national administration in setting up a health insurance program of which we and the country can be proud.

DISCUSSION

DR. THURMAN B. RICE, Indianapolis: I want to present this subject from the point of view of practical administration. It is impossible for me to know just exactly what the intention of the people in the Children's Bureau was. Dr. Plass believes that they were definitely politically minded and that they were deliberately setting up something here that would enable them to get hold of the whole situation. If it is true, it is a serious indictment. My own feeling is that they did not intend it that way quite as strongly as Dr. Plass implied. I believe that they are leftist inclined. I believe that they honestly believe in the sort of thing that they are doing. I believe that they saw in this an opportunity to usurp a function which Congress did not give them as I read the act. When they got into it, it was much bigger than they realized. There is a disposition at the present time for them to modify it here and there, without, as Dr. Plass pointed out, modifying the basic fact where the basic error was committed. According to the law they are to give infant care "under allotments by the Secretary of Labor and

plans developed and administered by state health agencies and approved by the chief of the Children's Bureau." It would seem that the plans were to have originated in the states and to be administered in the states and that the approval of the Children's Bureau is something that comes after. I do not believe that Congress intended that the Children's Bureau should lay down plans covering every state in the Union and also covering Puerto Rico, the Hawaiian Islands, Alaska and the Virgin Islands. Congress said here that the state makes the plans and administers them and that the Children's Bureau approves them. This came on us so suddenly and it is such a large administrative problem that it simply overwhelms us. Actually more than half of our budget is this money. It takes a vast amount of clerical and bookkeeping work to get this stuff through. We have asked for decisions. Three or four months later we would get a letter perhaps telling what we should do. In the meantime the woman has delivered the baby. Then you try to go back but you can go back just about as easily as the woman can go back on that physical process. Sometimes we have had physicians operating under as many as three sets of price schedules. For example, a woman is reported pregnant, we will say, in May, and she is taken and the funds are encumbered. A little later another woman comes in, in June, and in the meantime the rules have changed. Well, the funds must be encumbered, as the rules say, at that time. Another woman might come in in September and there is still another set of rules. That physician must charge and send in his bill according to the particular set of rules that were in force when the woman first came to him. So he will deliver three women in one week on three different fee schedules. The Children's Bureau in times past has done a pretty good job teaching the profession about good obstetric care and pediatric care. I seem to remember that they have taught us that the woman ought to go to the doctor once a month as soon as she finds that she is pregnant. During the first five months that would be four visits. Then for the next three months she ought to go twice a month. That makes ten visits, and the last month, the ninth month, she ought to go once a week and that makes fourteen visits. How much do we allow for the antepartum care? Ten dollars. How much a call do we allow for antepartum visits? Two dollars. That is some high falutin' arithmetic: fourteen times \$2 equals \$10! They have taught us good antepartum care but when it comes to paying for it they are afraid to trust physicians. They are also afraid to trust health administrators, and they are also afraid to trust the soldier and his wife because they won't give her the money. That is teaching distrust in a big way and it is confusing. The Children's Bureau has permitted blame for difficulties to fall on the health departments and on the doctors, but not on itself. One tremendous benefit has come out of this. It has sometimes helped the woman, of course, but there has been another enormous benefit. This is a guinea pig which is of great value in showing us what kind of a mess we would be in if we had the whole program. For the present current year the program in the whole United States amounts to \$42,800,000. The whole Wagner-Murray-Dingell program I have heard estimated all the way from 3 billion dollars to 12 billion dollars. I do not know which is right, but if we have this much trouble administering \$42,000,000 we would certainly be in a mess if we had to administer 3 thousand million or 12 thousand million dollars.

DR. GEORGE H. KRESS, San Francisco: I cannot agree with the statement that Congress is to blame for enacting an EMIC program that contains provisions to which physicians object. We should blame ourselves. Organized medicine was not alert when the program was brought into being by the Federal Children's Bureau. Up to October 18 last, New York had 47,000 EMIC cases. California was second with 34,000. Dr. William B. Thompson of Los Angeles, a member of the California Medical Association Committee, was called to Washington to give testimony before a congressional committee. Dr. Bierman of the California Maternal and Child Welfare Bureau submitted for our California committee some requests to the federal Children's Bureau in the hope of rectifying some of the deficiencies in the federal bureau's procedures. Our suggestions had to do with payments to physicians in sparsely settled areas in which certified specialists were not available and for compensation to

physicians in such sections who were obliged to use their own x-ray and other equipment. A simpler form contract was set up for California, and some dangerous provisions that had malpractice implications were deleted. When Dr. Daily first came to California with the federal Children's Bureau he stated that \$35 should be the total compensation. California insisted that at least \$50 be paid by the government for each EMIC case. That fee has now been established in practically all states in the Union.

DR. H. H. SKINNER, Yakima, Wash.: It is in my state that this program was initiated, and it was my questionable privilege to have been chairman of the committee that started this. The problems before the medical profession and the United States at present is free medicine. The EMIC program is the proposition which appeals to both the United States and the profession as being the entering wedge for that very proposition. The Miller bill has not been mentioned yet this afternoon and it may not be, but I wish to go on record as favoring it. If we are going to get anywhere we must do something. We can do it only through Congress. Some of you know Congressmen. It has been my privilege to talk to a number of Congressmen and they are unified on this one point: they do not know what is going on in the medical profession. We have not told them, but they are willing to listen. Are you willing to spend some money for it? The chiropractors are willing to spend \$200 apiece a year. Would you be willing to spend \$10, \$15 or \$25 and put yourselves in a class with the chiropractors by spending some money to send a man to Washington to confer with your congressional representatives, merely stating how you feel in your community through your state organization? Iowa has been doing it. Let us go to our representatives in Congress, but we must have one concept.

DR. L. J. MOORMAN, Oklahoma City: When this proposition first came to the state of Oklahoma, our commissioner of health, who is a good doctor, loyal to hippocratic principles, was troubled about it and called for a committee. As a member of the committee I opposed its acceptance unless under coercion, because I figured that doctors might go on doing obstetrics as they have always done, for something or for nothing, and I figured that any doctor's personal liberty is at any time worth more than an obstetric fee. However, we did put the plan into practice, and I am gratified to see how many of the doctors feel about it here today. I want to say this one word, which covers this proposition and our present situation: We have been so busy keeping up with the science of medicine that we have neglected the art of medicine to the point of losing much of our highest rating in the minds of the people. While we have been busy following the science of medicine, some of our representatives in Washington have been busy for twelve years depreciating the standing of medicine with a propaganda which has covered the whole country. We have lost our opportunity to a great extent. If we recover our position it must be through education of the people, the patient and the patient's friends. The most good will be through the doctor's personality impressed on his patient.

DR. E. D. PLASS, Iowa City: There seems to be unanimity of feeling that the program is wrong and that the only method of attack is through Congress, but I should like to say just a few words in justification possibly of the Advisory Committee. It is exactly what its name says. It has absolutely no power. All it can do is go before the Children's Bureau and offer its ideas, which the Children's Bureau then accepts or flouts as it chooses. It should perhaps also be emphasized that, when this program was first inaugurated and when the first regulations were sent out to the states, the Advisory Committee was called in for a meeting after the regulations had gone to the states, and we were then told "We would like for you to discuss the various features of these regulations, but we want no motions." That is the authority of the Advisory Committee, and I think perhaps you should not be too critical of the committee.

DR. THURMAN B. RICE, Indianapolis: I actually believe that if every one who is interested in this would talk to or write to his Congressman there would be some result and that the Children's Bureau would have to listen and it would be less autocratic than it has been.

(To be continued)

Washington Letter

(From a Special Correspondent)

Jan. 8, 1945.

UNRRA Has Important Role in European Health

Herbert H. Lehman, director general of the United Nations Relief and Rehabilitation Administration, has reported after a six weeks trip to London and the continent that "the chief responsibilities of UNRRA in the paying countries of western Europe for assistance to the military are in the fields of health, welfare and displaced persons operations." In occupied Germany UNRRA will work with displaced persons under direction of the military. Mr. Lehman disclosed that UNRRA is ready to send relief supplies to Poland and Czechoslovakia if Russia will receive and distribute them. In London he concluded agreements with the governments of all the western European United Nations—Norway, Belgium, the Netherlands, France and Luxembourg—for the dispatch of UNRRA liaison missions to them, to deal chiefly with health, welfare and displaced persons aspects of relief problems. UNRRA has accepted the invitation of the Czech government to send a representative with a group of Czech health experts to liberated parts of that country. Medical supplies will be an important part of first relief shipments to Czechoslovakia. Mr. Lehman said it was hoped that relief imports would be financed by the individual governments able to do so, thus making more of UNRRA's limited goods available to governments lacking foreign exchange resources.

"Luxury" Private Nursing Demands Criticized

Hospital officials called together by the Nursing Council for War Services have criticized the continued demand for "luxury" private duty nursing, with the Army and Navy in urgent need of 14,000 additional nurses. A public meeting planned by the Graduate Nurses' Association for January will emphasize the drastic shortage of nurses for the armed forces and at the same time honor nurses with overseas service. The need for nurses is so acute that Congress may be asked to investigate the shortage, which has resulted in eleven general hospitals being sent abroad during December with no nurses in their personnel. Congressmen back from overseas were indignant that sufficient nurses are not available to care for the wounded. They have made the charges (1) that civilian hospitals are "hoarding" nurses and (2) that superintendents and other hospital officials are threatening nurses that if they join the armed forces they will not be allowed to rejoin the hospital on their return to civilian life.

Capital Medical Center to Be Pushed

Erection of a mammoth government financed medical center in the Capital will continue to be sought, Senator Theodore G. Bilbo of Mississippi, chairman of the Senate District Committee, announces. Although additions have been authorized to Georgetown and George Washington hospitals here, Senator Bilbo said that he would ask the incoming session of Congress for action on the proposed medical center. He contends that it is needed despite the additions to existing institutions.

Charles F. Kettering Succeeds Dr. Anton J. Carlson

Charles F. Kettering was elected president of the American Association for the Advancement of Science, succeeding Dr. Anton J. Carlson, University of Chicago physiologist. Among vice presidents named were Dr. Warfield Longcope, Johns Hopkins, medical science; Dr. F. D. Kern, Pennsylvania State College, zoology; Dr. A. I. Hallowell, Northwestern, anthropology; Dr. Florence L. Goodenough, University of Minnesota, psychology, and Dr. Henry Eyring, Princeton, chemistry.

Reassuring Report Made on Army Hospitals

The House Military Affairs Committee has reported "reassuring" results in its long investigation of army hospitals. The War Department, the committee said, had taken corrective action in almost all suggestions based on its survey of eighty-nine hospitals in twenty states and the District of Columbia. There were twenty-eight specific cases listed without naming hospitals. Buildings in general were reported to be receiving proper care, although some had uncovered pin floors and needed paint and connecting passageways between

wards and main buildings. Fire equipment was said to be generally adequate, although one nonfireproof building dating "back to the Civil War" had bedridden patients on the second and third floors. One convalescent hospital used storage eggs which had not been inspected for nine months. They were served with catsup "to disguise their evil taste." Several hospitals were closed or not used to maximum capacity "despite overcrowded conditions elsewhere."

Representative Dingell Reintroduces Compulsory Sickness Insurance Bill

The 79th Congress convened January 3 and on that day Congressman Dingell, Michigan, reintroduced the Wagner-Murray-Dingell bill as H. R. 395. It was referred to the House Committee on Ways and Means. The Senate version of the bill has not as yet been introduced, but the medical provisions of H. R. 395 are identical with those contained in the legislation that was before the 78th Congress.

Postwar Medical Service

The Committee on Postwar Medical Service was called to order by the Secretary pro tem, Dr. Ernest E. Irons, Dec. 9, 1944 in the Board of Trustees Room of the American Medical Association building in Chicago. There were present Drs. Irvin Abell; Arthur W. Allen and Walter L. Bierring; Mr. Graham L. Davis; Capt. William E. Eaton; Drs. Evarts A. Graham, E. L. Henderson and Ernest E. Irons; Lieut. Col. Harold C. Lueth; Dr. Walter W. Palmer; Brig. Gen. Fred W. Rankin; Rev. A. M. Schwitalla, S.J.; Drs. H. H. Shoulders and LeRoy H. Sloan; Miss Mary Switzer and Drs. Olin West and Fred C. Zapffe, members of the Committee, and Dr. F. H. Arestad of the Council on Medical Education and Hospitals, American Medical Association; Lieut. Col. Gerard R. Gessner, Office of the Surgeon General, U. S. Army; Dr. Edwin P. Jordan, Assistant Editor of THE JOURNAL; Col. Hugo Mella, Veterans Administration; Col. George M. Powell, Office of the Surgeon General, U. S. Army, and Dr. R. C. Williams, U. S. Public Health Service, representing the organizations indicated.

COMMITTEE MEMBERSHIP

The Secretary pro tem announced the resignation of Dr. Roger I. Lee of Boston as chairman and as a member of the Committee on Postwar Medical Service because of greatly increased pressure of other duties. Dr. Lee's resignation was accepted with regret, on motion of Dr. Arthur W. Allen, duly seconded and carried. The Secretary pro tem informed the Committee that Dr. E. L. Henderson of Louisville, Ky., a member of the Board of Trustees of the American Medical Association, had been appointed by the Board to take the place of Dr. Lee as a member of the Committee.

Dr. Ernest E. Irons was elected chairman of the Committee. Dr. Arthur W. Allen of Boston was elected vice chairman.

The Chairman announced that Dr. Alan Gregg, a member of the Committee representing the American Medical Association, had resigned. The Chairman also informed the Committee that Dr. LeRoy H. Sloan of Chicago had been appointed by the American College of Physicians to represent that organization as a member of the Committee on Postwar Medical Service to succeed Dr. William B. Breed, deceased. It was announced by the Chairman that Dr. Willard C. Rappleye had resigned his membership on the Committee, that the Association of American Medical Colleges had been requested to name a representative of that organization to serve as a member of the Committee, and that Dr. Fred C. Zapffe of Chicago had been so named.

Dr. H. H. Shoulders, Nashville, Tenn., was elected secretary of the Committee, succeeding Dr. Alan Gregg.

REPORT OF SUBCOMMITTEE ON RELATION OF COMMITTEE ON POSTWAR MEDICAL SERVICE AND THE PROCUREMENT AND ASSIGNMENT SERVICE

The report of the Subcommittee on Relation of Committee on Postwar Medical Service and the Procurement and Assignment Service was read by Lieut. Col. Harold C. Lueth and,

after extended discussion participated in by Dr. Palmer, Miss Switzer, Lieutenant Colonel Lueth, Dr. Irons and Father Schwitalla, the report was accepted on motion of Dr. Palmer, duly seconded and carried, and the Subcommittee continued. The report was as follows:

1. This subcommittee was appointed by the Chairman of the Committee on Postwar Medical Service to draw up a statement of the relation of the Committee and the Procurement and Assignment Service.

2. In a recently published statement, the Directing Board of the Procurement and Assignment Service stated that, "as a war agency, this service is discharging and will continue to discharge its obligations until the end of the war. It will cooperate with the agencies concerned with the effective utilization of the individual members of these professions who are demobilized before the end of the war."

3. The Directing Board of the Procurement and Assignment Service regards their equipment and data as property of the United States government.

4. The present organization of the Procurement and Assignment Service in states and counties has had experience in advising with respect to local needs of doctors and the distribution of medical care. The people in the field organization of the Procurement and Assignment Service can in many instances, as individuals, provide valuable information in the future.

5. The Committee desires to retain the active interest of physician members of the Procurement and Assignment Service during the transition period and later when the Procurement and Assignment Service has ceased to function.

6. The cooperation of physician members of state and county organizations of the Procurement and Assignment Service will be of great assistance to the Bureau of Information of the American Medical Association and to the Committee on Postwar Medical Service.

ERNEST E. IRONS, Chairman.
HAROLD S. DIEHL.
MORRIS FISHBEN.
VICTOR JOHNSON.
HAROLD C. LUETH.

FURTHER REPORT ON QUESTIONNAIRES SENT TO MEDICAL OFFICERS

Lieutenant Colonel Lueth reported that over 21,000 questionnaires had been returned and that in about two weeks 20,000 of the returned questionnaires will have been completed on the punch card system and minute analyses will then be made.

Lieutenant Colonel Lueth informed the Committee regarding a recent conference between Dr. T. C. Routley, secretary of the Canadian Medical Association, Dr. West and himself and stated that he expects to meet in the near future with Dr. Routley and Colonel Ledbetter of Canada. There was considerable discussion concerning what is now being done in Canada for medical officers back from active service for a period of home duty. A preceptor arrangement, whereby a returned medical officer is sent to a medical school and assigned to a specific man as his preceptor, seems to be the most promising idea that has yet been evolved. It seemed to be the consensus that the preceptor system would be difficult to operate successfully in this country because of the vastly larger number of persons involved.

REPORT ON QUESTIONNAIRES SENT TO HOSPITALS WITH REGARD TO AVAILABLE RESIDENCIES AND OTHER EDUCATIONAL OPPORTUNITIES

Dr. F. H. Arestad reported that questionnaires had been prepared by the staff of the Council with the aid of Lieutenant Colonel Lueth and had been sent to 1,050 civilian hospitals, approved for intern and residency training; that, for the purpose of information, the same material had been sent to the deans of recognized medical schools, to the secretaries of the constituent state medical associations, to national medical organizations, to the specialty boards, to the sections of the Scientific Assembly of the American Medical Association, to the editors of all state medical journals and to other interested

agencies and individuals, and that to date there had been a 20 per cent return. Dr. Arestad gave a summary of the results so far obtained from this questionnaire. He stated that all institutions, deans of medical schools and medical organizations from whom replies had been received indicated a sincere desire to cooperate fully with the Committee on Postwar Medical Service.

It was brought out that both the Army and the Navy were trying to develop refresher courses for returning medical officers but that these courses could be given only to men still in uniform.

Dr. Zapffe stated that the Association of American Medical Colleges was collecting lists of faculty members now in service whom the medical schools considered essential to the satisfactory operation of the schools. This matter was discussed by Dr. Palmer, Father Schwitalla, Colonel Powell and Miss Switzer, who stated that up to now the Procurement and Assignment Service has been handling demobilization of returned medical officers; that it helps to get facts together and advises on cases; that the Procurement and Assignment Service is looked to for information on communities in need of physicians, and that it would be glad to continue to do all this while the service exists. It was agreed by the Committee, on motion of Dr. Palmer, seconded by Lieutenant Colonel Gessner and carried, that the Procurement and Assignment Service is the logical body to handle this matter.

BUREAU OF INFORMATION OF THE AMERICAN MEDICAL ASSOCIATION

Dr. West informed the Committee regarding the organization of the Bureau of Information and called on Lieutenant Colonel Lueth, who has been instrumental in getting the Bureau started, to give a summary of its activities to date. (See THE JOURNAL, January 6, page 33.)

REPORT ON PROGRESS IN PLANS FOR DISPOSAL OF ARMY MEDICAL SURPLUSES

Miss Switzer reported that a Surplus Property Board has now been appointed and is awaiting confirmation; that it is not known whether the organization will be on a federal or a state basis; that the Public Health Service is now trying to formulate plans for the best way to distribute surplus medical supplies to places that need them, and that it ought to be known by the time of the next meeting of the Committee on Postwar Medical Service what the general lines of the surplus property distribution will be.

REPORT OF PROGRESS IN ARMY AND NAVY PLANS FOR RESIDENCIES, GRADUATE STUDY AND REFRESHER COURSES FOR MEDICAL OFFICERS IN SERVICE

Colonel Powell stated that a committee had been established in the Office of the Surgeon General of the Army but that there was not yet any crystallization of ideas beyond what had already been mentioned at this meeting.

Captain Eaton stated that the Office of the Surgeon General of the Navy had a committee that had set up a proposed plan to bring back men from overseas and put them into hospitals where they could get further professional work. Captain Eaton described the Navy setup in detail and, during his remarks, said that the Navy hoped that civilian medical associations and authorities, particularly the specialty boards, would give naval medical officers credit for refresher courses the Navy has given them.

REPORT ON PROPOSED LAWS CONCERNING TEMPORARY LICENSURE

Dr. Walter L. Bierring, secretary of the Federation of State Medical Boards, was called on by the Chairman to inform the Committee concerning the status of laws that have been proposed or enacted to provide for the issuance of temporary licenses. Dr. Bierring stated that the resolution which had been adopted by the Committee at its meeting held in New York on September 9 apparently had met with some criticism, largely through misunderstanding, that the intent of the Committee was to facilitate the temporary relocation of returning medical

officers and that any action would be determined by local state needs and wishes. Dr. Bierring moved that the resolution previously adopted be restated. The motion was duly seconded and carried after discussion by Drs. West and Shoulders, Miss Switzer and Dr. Bierring.

The following resolution was drawn up by Dr. Bierring and Dr. Shoulders and was adopted by the Committee on Postwar Medical Service on motion of Dr. Bierring, seconded by Dr. Palmer and carried:

WHEREAS, Logical objections have been interposed by certain member boards of the Federation of State Medical Boards of the United States to the resolution adopted by the Committee at its meeting in New York City, Sept. 9, 1944, giving its approval to legislation proposed by the Procurement and Assignment Service, the Council of State Government and the U. S. Department of Justice, under which temporary licensure may be granted without examination to honorably discharged medical officers of the U. S. Army, Navy and Public Health Service and to physicians "who have rendered medical service during the period 1940 to 1945 in industry or in a civilian community"; therefore be it

Resolved, That the Committee restate its position as follows: That the Committee on Postwar Medical Service approves this legislation as far as it applies to the granting of temporary licensure without examination to honorably discharged medical officers of the U. S. Army, Navy and Public Health Service under the limitations and restrictions contained in the proposed legislation.

REPORT OF SUBCOMMITTEE TO CONFER WITH REPRESENTATIVES OF VETERANS ADMINISTRATION

Father Schwitalla, chairman of the Subcommittee, informed the Committee regarding a conference that had been had with Dr. Griffith, medical director of the Veterans Administration, and Mr. Harold V. Stirling, director of the Vocational Rehabilitation Service of the Veterans Administration, at which both of these gentlemen had expressed the hope that any criticisms which might come to the notice of the Committee on Postwar Medical Service be transmitted to them. Procedure to be used in getting out official lists of institutions to be utilized by the Veterans Administration was discussed.

The report of the subcommittee was accepted and the committee continued.

REPORT OF SUBCOMMITTEE TO CONFER WITH SURGEONS GENERAL OF ARMY, NAVY AND PUBLIC HEALTH SERVICE

The chairman called for the report of the Subcommittee to Confer with the Surgeons General of the Army, Navy and Public Health Service and, in the absence of Dr. Collier, chairman of the subcommittee, Dr. Palmer stated that it had not been possible since the October meeting to arrange the desired conferences with Admiral McIntire or Surgeon General Parran, but that it is hoped that such conferences can be arranged for around Christmas or early in January.

COMMUNICATIONS FROM MEDICAL OFFICERS

The Chairman informed the Committee that he had in his possession a number of letters sent him as Secretary pro tem by Dr. Lee that had been received from medical officers on active duty, most of which were in the nature of complaints concerning the type or lack of professional work they were doing. He requested the opinion of the Committee as to what should be done with these and similar letters that might be received. The matter was discussed by Dr. Graham, Lieutenant Colonel Gessner and Drs. West and Bierring, and it was agreed by the Committee that such communications should be sent without the names of the writers to the proper officers of the military services concerned in Washington for opinion or information, this, in turn, to be transmitted to the original writers by the Committee.

TIME AND PLACE OF NEXT COMMITTEE MEETING

It was moved by Dr. Bierring, duly seconded and carried, that the next meeting of the Committee on Postwar Medical Service be held at 535 North Dearborn Street, Chicago, on Saturday, Feb. 10, 1945.

The meeting adjourned at 1:18 p. m.

Medical Economic Abstracts

ASSOCIATED HOSPITAL SERVICE OF NEW YORK GRANTS NEW INCREASE IN BENEFITS

Increased benefits to the 1,700,000 members of the Associated Hospital Service of New York were announced November 30 by Louis H. Pink, president. Beginning December 1 subscribers are entitled to receive hospital care during a period of twenty-one days for each separate illness they may suffer instead of twenty-one days for the entire year. The policy of the organization granting benefits for ninety extra days at one-half the regular hospital rates will remain in effect for each period of hospitalization. In addition a cash allowance of \$7.25 will be paid to subscribers who may need operating room service at the hospital but who do not become bed patients. "These benefits have been granted," said Mr. Pink, "in keeping with our basic policy of sharing with members and their families all surpluses beyond those necessary for sound operation. They will be continued as long as our financial condition permits us to do so. Whenever our experience with added benefits proves favorable over a reasonable period of time, they are included in the contracts of our subscribers."

INDEMNITY VERSUS SERVICE PREPAYMENT MEDICAL PROGRAMS

The Council on Medical Service and Public Relations found at one of its regional conferences recently that there is a widespread belief that the Council favors cash indemnity prepayment medical care plans over service plans. The House of Delegates has approved both types of plans. It approved specifically the indemnity type of plan in 1938, and that approval led to an inference that the House favored that type of plan over a service plan. To correct that impression the House at its Atlantic City, 1942, session adopted a resolution approving the "principle of medical service plans on a service basis when sponsored by a constituent state medical association or a component county medical society in accordance with the recommendations relative to medical service plans adopted by the House of Delegates." The Council urges the extension and development of all types of prepayment medical care plans that meet the essentials laid down by the House of Delegates with respect to such plans.

Medical Legislation

MEDICAL BILLS IN CONGRESS

Bills Introduced.—H. R. 56, introduced by Representative Izac, California, proposes to amend the Social Security Act to provide benefits to persons permanently crippled to a degree such that they are not able to engage in a gainful occupation similar to the benefits now available to the blind. H. R. 68 and H. R. 483, introduced by Representative Lane, Massachusetts, propose to grant temporary commissioned rank to certain male nurses serving in the armed forces. H. R. 76, introduced by Representative Lane, Massachusetts, proposes to authorize an appropriation of \$1,500,000 to construct a veterans' hospital at Lawrence, Mass. to accommodate approximately 2,000 bed patients. H. R. 103, introduced by Representative Voorhis, California, proposes permanent and total disability ratings to veterans suffering from severe industrial inadaptability as a result of war service. H. R. 125, introduced by Representative Lane, Massachusetts, proposes to recognize the high public service rendered by soldiers who volunteered and served in trench fever experiments in the American Expeditionary Forces during World War I. H. R. 140, introduced by Representative Voorhis, California, proposes to amend the Social Security Act so as to permit each state to adopt its own interpretation of the phrase "needy individuals" as used in the act. H. R. 141, introduced by Representative Voorhis, California, proposes to amend title X of the Social Security Act so as to permit each state to adopt its own interpreta-

tion of the phrases "needy individuals who are blind" and "blind individuals who are needy" as used in the act. H. R. 154, introduced by Representative Voorhis, California, proposes that the education and training provided by the Servicemen's Readjustment Act of 1944 shall be available to veterans on an equal basis without regard to their age. H. R. 168, introduced by Representative Cannon, Missouri, proposes to restore the benefits extended to veterans of the World War that were repealed by the Economy Act of 1933. H. R. 284, introduced by Representative Randolph, West Virginia, proposes to provide health programs for government employees. When action on a similar bill was sought in the Senate during the closing days of the 78th Congress, Senator Downey of California submitted an amendment which would have permitted osteopaths to participate in the health programs. H. R. 327, introduced by Representative Rogers, Massachusetts, proposes the establishment of a permanent Nurse Corps in the Veterans Administration. H. R. 363, introduced by Representative Bolton, Ohio, proposes additional pay for enlisted men in the Army assigned to the Medical Corps who are awarded the Medical Corps valor badge. H. R. 372, introduced by Representative Cannon, Florida, directs the Veterans Administration to provide vocational rehabilitation and assistance in securing suitable employment for service connected disabled veterans in need thereof. H. R. 395, introduced by Representative Dingell, Michigan, proposes to create a Unified National Social Insurance System to provide, among other things, temporary and permanent disability benefits and medical and hospitalization insurance benefits. The medical provisions of this bill are identical with those contained in the Wagner-Murray-Dingell bill introduced in the 78th Congress. H. R. 424, introduced by Representative Harless, Arizona, provides additional compensation for enlisted personnel of the Medical Department of the Army who serve in combat areas. H. R. 491, introduced by Representative Lemke, North Dakota, undertakes to prohibit experiments on living dogs in the District of Columbia. H. R. 519, introduced by Representative Mundt, South Dakota, provides for the prevention of pollution of waters of the United States. H. R. 525, introduced by Representative Norton, New Jersey, provides for cooperation with state agencies administering labor laws in establishing and maintaining safe and proper working conditions in industry and in the preparation, promulgation and enforcement of regulations to control industrial health hazards. H. R. 535, introduced by Representative Peterson, Florida, undertakes to amend veterans' regulations so as to provide that the use of an eye should be considered lost when visual acuity is 5/200 or less. H. R. 610, introduced by Representative Tolan, California, proposes to amend the United States Employees' Compensation Act so as to permit chiropractors to treat beneficiaries.

Society Proceedings

COMING MEETINGS

- Annual Congress on Industrial Health, Chicago, Feb. 13-15. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago, Secretary.
- Annual Congress on Medical Education and Licensure, Chicago, Feb. 12-13. Dr. Victor Johnson, 535 N. Dearborn St., Chicago, Secretary.
- Annual Forum on Allergy, Pittsburgh, January 20-21. Dr. Jonathan Forman, 956 Bryden Road, Columbus, Ohio, Director.
- Chicago Medical Society Annual Clinical Conference, Chicago, Feb. 27-March 1. Dr. Warren W. Furey, 30 N. Michigan Blvd., Chicago 2, Secretary.
- Middle Section, American Laryngological, Rhinological and Otolological Society, Indianapolis, January 17. Dr. Carl H. McCaskey, 608 Guaranty Bldg., Indianapolis, Chairman.
- Midwest Conference on Rehabilitation, Chicago, Feb. 12. Dr. Henry T. Ricketts, University of Chicago, Chicago, Chairman Committee on Arrangements.
- Society of Surgeons of New Jersey, Jersey City, January 31. Dr. Walter B. Mount, 21 Plymouth St., Montclair, N. J., Secretary.
- Southern Section, American Laryngological, Rhinological and Otolological Society, Charlotte, N. C., January 15. Dr. Verling K. Hart, 106 W. 7th St., Charlotte, N. C., Chairman.
- Western Section, American Laryngological, Rhinological and Otolological Society, Los Angeles, January 27-28. Dr. Aubrey G. Rawlins, 384 Post St., San Francisco, Chairman.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

COLORADO

Rheumatic Fever Diagnostic Service.—Dr. Ward Darley Jr. is the director of a rheumatic fever diagnostic service recently established by the Denver Area War Chest. The service has been organized to find cases of rheumatic fever and rheumatic heart disease among children and to see that these children are referred to a private physician or a clinic for care. Facilities are for diagnosis only, and no treatment is given. Children are referred chiefly by physicians and nurses of the schools and various public health, county and social agencies. Such children who already have a family physician are not seen in the clinic without the physician's written consent. In addition to discovering cases of rheumatic fever or its sequelae among children and sending them to physicians for cure, the service is also available to physicians who wish a careful check on patients with findings of heart disease or rheumatic fever. The patient is registered, weighed and measured, the history is taken and a physical examination is made. The urine is collected and blood obtained for a Wassermann test, sedimentation rate and blood count. One electrocardiogram including precordial leads is taken and fluoroscopy done with barium in the esophagus. While the primary purpose of these studies is to rule in or rule out rheumatic fever and rheumatic heart disease, it is to be expected that congenital heart disease and conditions which may be confused with rheumatic fever will be recognized. All results of the examinations are mailed to the physician, and the child is referred back to him. No charge is made.

DISTRICT OF COLUMBIA

Scientists Visit United States.—Seven scientists of India will spend six weeks in the United States as guests of the government. They are:

Nazir Ahmad, Ph.D., director, Indian Central Cotton Committee.
Dr. S. L. Bhatia, deputy director general, Indian Medical Service.
Sir Shanti Swarup Bhatnager, director of scientific and industrial research directorate, Government of India.
Sir Jaan Chandra Ghosh, D.Sc., director, Indian Institute of Science, Bangalore.
S. K. Mitra, D.Sc., Ghose professor of physics, Calcutta University.
J. N. Mukherji, D.Sc., professor of chemistry, University College of Science, Calcutta.
Meghand Saha, D.Sc., Palit professor of physics, Calcutta University.

GEORGIA

Ophthalmic Seminar to Honor Dr. Abner Calhoun.—A seminar on ophthalmology will be sponsored by Emory University School of Medicine, Atlanta, April 19-21, to honor the memory of the late Dr. Abner Wellborn Calhoun, the first professor of ophthalmology at Emory. Dr. Calhoun was born April 16, 1845 and died Aug. 21, 1910. Guest speakers will be Drs. William L. Benedict, Rochester, Minn.; John H. Dunnington, New York; Harry S. Gradle, Chicago; Parker Heath, Detroit; Walter I. Lillie, Philadelphia; Col. Derrick T. Vail Jr., M. C., and Dr. Frank B. Walsh, Baltimore. All interested in ophthalmology are invited to attend as guests of Emory University.

ILLINOIS

Booklets on Health Education.—Two brochures are now available incorporating basic plans for student health education in teacher trained institutions and the school health program. They have been prepared by the Illinois Joint Committee on School Health under the direction of Dr. Roland R. Cross, chairman, director of the state department of public health, Springfield; Vernon L. Nickell, superintendent of public instruction, Springfield; Frank G. Thompson, Mount Vernon, director of the department of registration and education, and Clair E. Turner, Dr.P.H., consultant. The plans have been prepared to serve as a guide and not as a graded course of study.

Chicago

Ludvig Hektoen Lecture.—The twenty-first Ludvig Hektoen Lecture of the Frank Billings Foundation will be delivered on March 23 at the Palmer House by Dr. Joseph W. Beard, assistant professor of surgery, Duke University School of Medicine, Durham, N. C., on "The Ultracentrifugal, Chemical and Electron Micrographic Characters of Purified Animal Viruses."

Joint Meeting on the Heart.—The Jackson Park Branch of the Chicago Medical Society and the clinical section of the Chicago Heart Association will hold a joint meeting at the Windermere East Hotel, January 18. Speakers will be Drs. Chauncey C. Maher on "The Heart in the Middle Aged" and Howard Wakefield, "Concerning Certain Problems of Coronary Artery Disease."

Officers of Institute of Medicine.—Dr. William C. Danforth is the new president of the Institute of Medicine of Chicago and Dr. Daniel J. Glomset, Des Moines, Iowa, vice president. Dr. George H. Coleman is secretary and Dr. Grant H. Laing treasurer. Dr. Ludvig Hektoen is honorary chairman of the board of governors, and Dr. William F. Petersen chairman of the board of governors.

Fernel Sentenced to Prison.—Dr. Jean Paul Fernel was sentenced to prison for three years on December 29 following his conviction by a jury on twenty-one charges of violating the Food and Drug Act (THE JOURNAL, Oct. 14, 1944, p. 444 and Sept. 2, 1944, p. 39). Fernel's license to practice medicine had been revoked on June 1, 1938 for the third time. Fernel was said to have carried on a mail order medical business from his home at 1543 North Wells Street. A former sentence of a year and a day imposed a year ago on a similar charge will be served concurrently with that of the recent sentence.

KENTUCKY

Society News.—Dr. Lester R. Dragstedt, Chicago, will address the Jefferson County Medical Society January 15 on "Supradiaphragmatic Section of Vagus Nerves in the Treatment of Gastroduodenal Ulcer."—Dr. Winston U. Rutledge, Louisville, will discuss "Industrial Dermatitis" before the Louisville Medico-Chirurgical Society January 26, and Dr. Harry S. Frazier, Louisville, "Staphylococci Septicemia."—Dr. Edwin P. Scott, Louisville, addressed the Louisville Society of Medicine January 4 on "Meningitis."

MASSACHUSETTS

Symposium on Low Back Pain.—On January 17 the New England Society of Physical Medicine will conduct a symposium on low back pain at the Hotel Kenmore, Boston. The speakers will be Drs. John G. Kuhns on "Orthopedic Management" and William Jason Mixter, "Ruptured Intervertebral Disks," both of Boston.

One Hundred Years of Medicine.—On December 6 the Middlesex North District Medical Society held special ceremonies in the Lowell Memorial Auditorium, Lowell, to observe its one hundredth anniversary. Among the speakers on the program were Drs. Benjamin deF. Lambert and James J. Cassidy, Lowell, president of the society; Roger I. Lee, Boston, President-Elect, American Medical Association, on "Medicine Today and Tomorrow"; Elmer S. Bagnall, Groveland, president, state medical society; Morris Fishbein, Editor of THE JOURNAL, and Archibald R. Gardner and Michael A. Tighe, Lowell, who was toastmaster. The society had its beginning in two associations which preceded it, the Middlesex Medical Association, organized in Lexington in October 1829, and the Lowell Medical Association. The Middlesex group held its third annual meeting in Lowell on May 16, 1832, and the fifth and last meeting was held at Charlestown. In 1833 "on account of loss of time and the expense incurred by the members in going by stage to and from their then distant places of meeting" the association was dissolved. For several years there was no formal organization of physicians in this vicinity. On March 8, 1839 a special meeting of Lowell physicians was held "to organize a society for mutual improvement," which resulted in the formation of the Lowell Medical Association. This society continued until a charter was granted by the Massachusetts Medical Society on Nov. 2, 1844 for the establishment of a district society to be known as the Middlesex District Medical Society. In 1850 Middlesex County was divided into three districts, east, north and south. Lowell and eighteen neighboring towns were included in the north district and the name of the Middlesex Society was changed to the Middlesex North District Medical Society, the name it now retains. In its anniversary program it is stated that on June 6, 1845 the society advertised for free patients, and two physicians were selected at each meeting to examine them, thus establishing a clinic, a practice which seems to have ceased in 1847.

MICHIGAN

Personal.—An upholstered arm chair was presented to Dr. Plinn F. Morse, Detroit, by members of the staff of the Highland Park General Hospital at a dinner December 13 to mark his retirement from active service as pathologist to the hospital. Dr. Morse will continue as consultant.

Society News.—On January 25 Dr. Percival Bailey, professor of neurology and neurosurgery, University of Illinois College of Medicine, Chicago, will address the Michigan Society of Neurology and Psychiatry, Detroit, on "Cerebral Architectonics." Dr. Karl A. Menninger, Topeka, Kan., addressed the society, November 30, on "Psychiatry in Medical Education."

MINNESOTA

The Mayo Memorial.—A twelve story building will be constructed at the University of Minnesota Medical School, Minneapolis, to link existing units into one medical center as a permanent tribute to the late Drs. Charles H. and William J. Mayo. Costing about \$2,000,000, the memorial will be located in the center of the University Hospital Quadrangle on the medical school campus, serving as the main entrance to the school and the hospitals. Construction of the new building will be skeleton type with red tone Minnesota wire cut face brick matching that in the adjacent buildings and trimmed with Indiana oolitic limestone. The memorial will contain a memorial auditorium, research laboratories, conference rooms and offices for the clinical departments and the department of pathology, the operating rooms and major laboratories of the University Hospitals, and the administrative offices of the medical school, the school of nursing, the University Hospitals and the department of postgraduate medical education. Nine projects figure in the ultimate development, the Mayo Memorial forming the central unit, including the existing Student Health Service, the obstetric unit and outpatient clinics, William Henry Eustis Children's Hospital, Elliot Memorial Hospital, George Chase Christian Memorial Cancer Institute, Todd Memorial Eye, Ear, Nose and Throat Hospital, a future hospital addition and a proposed building for the School of Public Health. All floors of the building from the basement to the fifth floor will connect with present hospital buildings. Experimental surgery with air conditioned animal quarters will be housed in the basement or first floor of the Memorial in connection with a suite of operating rooms for teaching purposes. The department of radiology and diagnostic, teaching and research laboratories will be on the second floor. On the fourth floor will be assembled the teaching and service laboratories of the University Hospitals, laboratories for clinical diagnosis, bacteriologic examinations, biochemistry, blood examinations, metabolic studies and electrocardiography, offices and rooms for the course in medical technology and the auditorium balcony. The auditorium will be on the main floor and accommodate about 700 persons. The fifth floor will house the department of pathology with teaching and research laboratories, a lecture room and pathologic museum. The sixth and seventh floors will be devoted to operating, surgical service, conference and anesthesia rooms, laboratories, galleries and general offices of the department of surgery. The eighth floor will house the laboratories, offices and conference rooms of the department of obstetrics and gynecology and the ninth the department of ophthalmology, otolaryngology and dermatology. On the tenth floor will be the laboratories, offices and conference rooms of the department of medicine, on the eleventh the department of neuropsychiatry and on the twelfth the department of pediatrics. On the top floor of the tower will be the administrative offices of the medical school, a "campus" office for the Mayo Foundation, a faculty room and a student and faculty lounge where students, faculty and guests may gather. The Committee of Founders of the Mayo Memorial, created by the 1943 Minnesota legislature to develop a suitable memorial to the two Mayo brothers, consists of three members each from the senate and the house of representatives and twelve additional members appointed by the governor. Donald J. Cowling, LL.D., Northfield, is chairman of the committee and Dr. George A. Earl, St. Paul, secretary. On November 4 the board of regents of the University of Minnesota approved the requests of the Committee of Founders to establish a Mayo Memorial Fund to which may be credited private and public donations and appropriations. Headquarters for the Mayo Memorial Fund are at 1126 Northwestern Bank Building, Minneapolis 2.

NEW YORK

Sanitary Code Amended.—On November 17 the Public Health Council adopted amendments to its state sanitary code, effective January 1, "to make the restrictions identical in septic sore throat and scarlet fever in accordance with present knowledge concerning the etiology of these clinical conditions and to make the restrictions with regard to communicable diseases on dairv farms more in accordance with the fact that pasteurization is the most important protective barrier." Recent requirements of the state sanitary code have provided that

isolation in septic sore throat shall be "until recovery," whereas isolation in the case of scarlet fever shall be "until twenty-one days after development of the disease. . . ." Because field and laboratory studies within recent years have demonstrated that, from the standpoint of the causative micro-organisms, septic sore throat and scarlet fever are identical, it is believed that there is no longer justification for isolation provisions which are not identical in these two clinical conditions and which therefore have been grouped under one designation, "streptococcic sore throat (including scarlet fever)." The isolation period has also been modified with the stipulation that all streptococcic sore throats are to be isolated until "the mucous membranes of the nose and throat appear normal, and until all abnormal discharges from the nose, throat and ears and suppurating glands have ceased, provided that such isolations shall continue for not less than seven days and not more than ninety days." *Health News* points out that release from isolation shall be on the basis of a negative throat culture and termination must be on a clinical basis. A new regulation provides that persons dying from diphtheria or scarlet fever may in the future be exempted from the provision calling for the immediate sealing of a casket.

New York City

Harvey Lecture.—Hermann Otto Laurenz Fischer, Ph.D., research professor, University of Toronto, Ont., will deliver the fourth Harvey Society Lecture of the current series at the New York Academy of Medicine, January 18. His subject will be "Biological and Chemical Relationships Between Hexoses and Inositols."

Meeting on the Heart.—The New York Heart Association, a division of the New York Tuberculosis and Health Association, will be addressed January 26 at the New York Academy of Medicine. The speakers will be Drs. Reginald H. Smithwick, Boston, on "Surgical Treatment of Hypertension" and Harry E. Ungerleider, "Cardiac Enlargement—Its Management and Significance."

Meeting on Diabetes.—The New York Diabetes Association was addressed at the New York Academy of Medicine, January 13, by Major Isadore Arthur Mirsky, M. C., on "What is the Cause of Diabetes in Man?" and Dr. John P. Peters, New Haven, Conn., "Use of Carbohydrate in Diabetic Acidosis." A round table discussion by a panel chosen from a group of members from the council of the American Diabetes Association concluded the session.

Class of '95 to Celebrate Anniversary.—The class of 1895 of the Columbia University College of Physicians and Surgeons will hold its fiftieth anniversary dinner at the Century Club, May 15. A feature of the dinner will be the presence of a 1945 graduate of the college as a guest of the class group to answer questions that were given to the 1895 class. According to Dr. Theron W. Kilner, class president, the class was the largest one ever to graduate at Columbia, containing 202 members.

Graduate Courses.—The New York University College of Medicine announces three postgraduate courses to start in February. One on internal medicine will be given by Dr. Charles H. Nammack and his associates. One on clinical gastroenterology, to be conducted by Dr. Zachary Sagal, was designated for practicing physicians, and the lectures will be preceded by demonstration of patients in the wards. The third course will be conducted by Dr. Otto Steinbrocker on arthritis and rheumatic disorders. Additional information may be obtained from the secretary of the New York University College of Medicine, 477 First Avenue, New York 16.

Information on Crippled Children.—On December 26 the New York City Health Department announced that there are more than 17,500 known cases of crippled and otherwise orthopedically handicapped children in the city. Based on figures of June 30, 1944 it was stated that prenatal influence and injuries associated with birth (6,246), poliomyelitis (3,914), cerebral palsy (1,819), congenital clubfoot (1,483) and scoliosis (1,474), in that order, rank highest among the causes of disability. A total of 17,578 orthopedically handicapped children under 21 years of age were registered with the division for physically handicapped children of the bureau of child hygiene, city department of health, as of June 30, 1944.

Chronic Pulmonary Diseases.—The New York Tuberculosis and Health Association announces that the thirty-fourth clinical session on chronic pulmonary diseases was held at the Cornell University Medical College Amphitheater, January 10, under the auspices of the Tuberculosis Sanatorium Conference of Metropolitan New York. The program included a discussion of x-ray films by Dr. Abraham E. Jaffin, Jersey City, N. J., chief, Hudson County tuberculosis clinics,

and talks by Drs. Horton C. Hinshaw, Rochester, Minn., on "Chemotherapy in Pulmonary Tuberculosis" and Maurice I. Smith, chief pharmacologist, National Institute of Health, Bethesda, Md., "Present Status of Research in the Chemotherapy of Sulfonamides and Sulfones in Experimental Tuberculosis."

NORTH CAROLINA

Symposium Marks Fiftieth Anniversary of Watts Hospital.—The fiftieth anniversary of the founding of Watts Hospital, Durham, will be observed February 14-15 with the presentation of the second annual medical and surgical symposium sponsored by the hospital staff. The program will be held at the Washington Duke Hotel, Durham.

TEXAS

University News.—Major Gen. George F. Lull, deputy surgeon general, U. S. Army, delivered the principal address at the second annual commencement of Southwestern Medical College of the Southwestern Medical Foundation, Dallas, December 18. Fifty-seven seniors were given the degree of doctor of medicine.

Personal.—Dr. Alvis E. Greer, Houston, has been made editor in chief of the *Medical Record and Annals*, succeeding Dr. Everett L. Goar, Houston, who has held the position for about eleven years.—Dr. Caleb O. Terrell, Fort Worth, has been appointed a member of the board of regents of the University of Texas, Austin, to succeed the late Dr. Kenneth H. Aynesworth, Waco.

The Greenwood Lectureship.—Dr. James Greenwood Jr. has donated a fund to the University of Texas Medical Branch, Galveston, to establish the *James Greenwood Lectureship* in neurology and neurosurgery in honor of his father, Dr. James Greenwood. The lectureship will provide for meetings both at the Baylor University College of Medicine at Houston and at the University of Texas Medical Branch in Galveston.

UTAH

Dr. Howells Resigns Salt Lake Health Position.—Dr. Thomas J. Howells has resigned as health commissioner of Salt Lake City, effective January 1. Dr. Howells, who held the position nine years, plans to enter private practice.

WEST VIRGINIA

State Free of Poliomyelitis.—Reports compiled by the state health department for the week ended December 16 show that West Virginia is free from all cases of poliomyelitis for the first time since last July. During the year 221 cases were reported in the state, with an estimated death toll of 9. This compares with 662 cases and 52 deaths in 1940. The death rate in that year was 7.8 per cent.

ALASKA

Northwest Medicine to Serve Alaska.—Beginning with its January issue *Northwest Medicine* will serve as the official journal of the Alaska Territorial Medical Association. The journal is now the official publication of the Oregon, Washington and Idaho state medical associations. Of the four territorial areas of the United States, medical journals are published by Hawaii and Puerto Rico, the latter in the Spanish language. Residents of the Virgin Islands do not have sufficient medical representation to publish a journal, and now Alaska will be officially represented in *Northwest Medicine*.

GENERAL

Public Health Nursing Day.—The American Red Cross, the National Organization for Public Health Nursing and other health agencies are cooperating in observing the first national public health nursing day January 26.

Noise Abatement Week.—The week of April 29-May 5 has been designated Noise Abatement Week, according to the National Noise Abatement Council. In past years Noise Abatement Week has been held from May 6 to May 12. George W. Haury, Buffalo, is president of the council sponsoring Noise Abatement Week.

Society for the Hard of Hearing.—Dr. C. Stewart Nash, Rochester, N. Y., was elected president of the American Society for the Hard of Hearing at its annual meeting in New York, November 10. Vice presidents are Mrs. A. E. Hunt, Newtonville, Mass., and Dr. Wesley M. Hunt, New York. Other officers include Mrs. Francis E. Lee, Maumee, Ohio, recording secretary, and Mr. Raymond H. Greenman, Washington, D. C., managing director. The recent meeting included a symposium on the prevention and alleviation of

the disorders and diseases associated with deafness and a session on rehabilitation and education. The convention was concluded with an anniversary banquet marking the completion of twenty-five years of service.

National Research Council Grants for Research in Endocrinology.—It is announced that requests to the National Research Council Committee on Research in Endocrinology for aid during the fiscal period from July 1, 1945 to June 30, 1946 will be received until Feb. 28, 1945. Application blanks may be obtained by addressing the Division of Medical Sciences, National Research Council, 2101 Constitution Avenue, Washington 25, D. C. In addition to a statement of the problem and research plan or program, the committee desires information regarding the proposed method of attack, the institutional support of the investigation and the uses to be made of the sum requested. No part of any grant may be used by the recipient institution for administrative expenses. Applications for aid of endocrine research on problems of sex in the narrower sense cannot be given favorable consideration, but the committee will consider support of studies on the effects of sex hormones on nonsexual functions; for example, on metabolism.

Special Society Elections.—At the second annual meeting of the American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery, November 10, Dr. Morris S. Bender, New York, was elected president. Other officers include Drs. Alfred Schattner, New York, vice president, Jacob Daley, New York, secretary, and Benjamin H. Shuster, Philadelphia, treasurer.—Brig. Gen. James S. Simmons, M. C., was chosen president-elect of the American Society of Tropical Medicine at its meeting in conjunction with the Southern Medical Association in St. Louis, November 14-16, and Dr. Rolla E. Dyer, Bethesda, Md., was installed as president. Other officers include Dr. Paul F. Russell, Washington, D. C., vice president, and Dr. Joseph S. D'Antoni, New Orleans, secretary-treasurer.—Dr. Marye Y. Dabney, Birmingham, Ala., was chosen president-elect of the Southern Medical Association and Dr. Edgar G. Ballenger, Atlanta, Ga., was inducted into the presidency. Other officers include Dr. Edward Vernon Mastin, St. Louis, vice president, and Mr. C. P. Loran, Birmingham, secretary, treasurer and general manager.—Dr. Walter B. Cannon, Boston, was reelected president of the American-Soviet Medical Society at its meeting in New York, November 11. Other officers include Dr. Abraham Stone, New York, national secretary, G. I. Shapiro, D.D.S., New York, corresponding secretary, and Dr. George I. Swetlow, Brooklyn, treasurer.—Dr. James C. Masson, Rochester, Minn., was elected president of the Western Surgical Association at its annual meeting in Chicago in December. Dr. Arthur R. Metz, 250 East Superior Street, Chicago 11, is the secretary and Dr. William M. Mills, Topeka, Kan., the treasurer.

CANADA

Society News.—Dr. Paul Letondal, University of Montreal Faculty of Medicine, was elected president of the Société Médicale de Montréal at its meeting December 19. Other officers include Drs. Armand Frappier, vice president; Origène Dufresne, general secretary; Jean Denis, assistant secretary, and Edouard Desjardins, treasurer. The society was founded in 1900 and incorporated in 1929.

Conference on Industrial Health.—The second annual conference on industrial health sponsored by the Health League of Canada (industrial division) was held at the Royal York Hotel, Toronto, December 6. The theme of the session was "Veteran's Rehabilitation" and speakers included Dr. Clarence M. Hincks, Toronto, Capt. Frank E. Coburn and Lieut. Col. Thomas H. D. Storms, R. C. A. M. C., Dr. Clarence D. Selby, Detroit, Dr. Edward C. Holmblad, Chicago, and Dr. John G. Cunningham, Toronto. One feature of the meeting was a round table discussion on a health program in an industrial plant.

Appointments to New Health and Welfare Unit.—Major General George B. Chisholm, director-general of medical services for the Canadian army, and George F. Davidson, director of the Canadian Welfare Council, have been appointed deputy ministers in the department of national health and welfare, according to the *Canadian Medical Association Journal*. The department was set up as a separate unit during the last session of parliament when the former pensions and health department was divided and made into a department of health and welfare and a department of veterans affairs. Mackenzie King, prime minister and formerly minister of pensions, has been placed in charge of the department of veterans affairs, and Hon. Brooke Claxton, former parliamentary assistant to Prime Minister King, was named health minister (THE JOURNAL, July 15, p. 803).

LATIN AMERICA

Health Activities in Latin America:—Research on Schistosomiasis.—A recent communication indicates that the laboratories of Jose Oliver Gonzalez, head of the department of zoology, School of Tropical Medicine, San Juan, Puerto Rico, are successfully developing a major refinement of the established detection test, simple and easy in application, to aid physicians in controlling schistosomiasis. The disease is said to be a major island affliction, affecting from 10 to 70 per cent of the Puerto Rican population in some areas and killing many slowly. The test consists of an injection of fluid containing the worm in a certain stage of its development. In 100 cases of known schistosomiasis in which the test was used it proved positive in all cases.

Availability of Penicillin.—Every person in Puerto Rico needing penicillin for treatment of sulfonamide resistant gonorrhea will be eligible for free injections, the insular health department recently announced. Large quantities of the drug have been obtained through cooperation of the federal Public Health Service and other agencies for the current antiveneral campaign. In addition to concentration on treatment for prostitutes the department of health explains that there will be enough of the drug to treat a large number of other persons in civilian life here. Only those gonorrhea cases which resist sulfonamides are eligible for the penicillin treatment. The prostitute treatment is being conducted through several hospitals throughout the island, which have been equipped to take care of several hundred women a week.

Socialized Medicine in Brazil.—Socialized medicine is being tried in certain sections of Brazil, according to Dr. Herminio Pessoa, physician attached to Santa Casa de Para Hospital in Belem. Physicians are not yet being paid well enough for the amount of work they are required to do, Dr. Pessoa is reported to have said, but, because of the system, many are receiving hospital and medical attention that would not be able to afford it otherwise. He is also reported to have said that physicians belonging to the Institute des Banquiers, an organization which provides aid for the underprivileged, are permitted to continue their private practice. Dr. Pessoa has been in the United States studying surgery at the Mayo Clinic, Rochester, Minn., for the past year, under the auspices of the Pan American Sanitary Bureau.

Congress on Neurosurgery.—The first South American Congress of Neurosurgery will be held at Montevideo, Uruguay, March 1-4. Officers of the congress include Dr. Alejandro H. Schroeder, president; Román Arana Iniguez, general secretary, and José B. Gomensoro, secretario del exterior.

Government Services

Appointments in Vocational Rehabilitation

Clifton K. Himmelsbach, Surgeon, U. S. Public Health Service, and Frank F. Furstenberg, Surgeon, U. S. Public Health Service Reserve, have been appointed assistant regional representatives in the Office of Vocational Rehabilitation, Federal Security Agency, effective in December. Dr. Himmelsbach will be assigned as assistant regional representative to the Kansas City, Mo., office and will provide assistance to the state vocational rehabilitation agencies in the organization and administration of the physical restoration phases of the vocational rehabilitation program. He will also serve as liaison with medical and hospital organizations and with other agencies interested in the vocational rehabilitation of disabled persons. Dr. Himmelsbach graduated at the University of Virginia Department of Medicine, Charlottesville, in 1931. He was clinical director of the U. S. Public Health Service Hospital, Lexington, Ky., from 1937 to 1939 and was director of research from 1939 to 1944. Dr. Himmelsbach is well known as a clinical investigator of morphine and its derivatives, with particular reference to addiction. Dr. Furstenberg has been assigned to the San Francisco office and his services will be available to all states in the western area. Dr. Furstenberg graduated at the Indiana University School of Medicine, Indianapolis, in 1931 and served internships at the Indianapolis City Hospital, Sinai Hospital, Baltimore, and the New York State Psychiatric Institute, Columbia University 1933-34. He was medical director of the Maryland State Transient Bureau 1934-33 and medical consultant to the Maryland National Youth Administration program in 1941. Prior to his assignment to the Office of Vocational Rehabilitation,

Dr. Furstenberg was health officer for the Monroe County Health Department, Key West, Fla. He is an instructor in medicine (on leave) at Johns Hopkins University School of Medicine, Baltimore.

Examination for Regular Corps Appointment as Assistant Surgeon and Senior Assistant Surgeon in Public Health Service

An examination to establish eligibility for appointment as medical officers in the grade of assistant surgeon (1st lieutenant) and senior assistant surgeon (captain) is hereby announced to be held on the dates specified. An applicant for assistant surgeon must be a citizen of the United States, a graduate of a recognized medical school, and must have completed, or be in the process of completing, one year of internship or its equivalent. An applicant for senior assistant surgeon must meet requirements for assistant surgeon and must have had in addition at least four years of professional training or experience. The compensation of officers in the grade of assistant surgeon is \$3,411 per annum with dependents and \$2,975.50 per annum without dependents. The compensation of officers in the grade of senior assistant surgeon is \$3,991 per annum with dependents and \$3,555.50 per annum without dependents. Appointments in the regular corps are permanent in nature and afford opportunity for a career. Promotions are at regular intervals up to and including the grade of medical director (colonel). Promotion, pay and retirement schedules for medical officers in the Regular Corps of the U. S. Public Health Service are essentially the same as those of the medical corps of the Army. Officers agree to serve where assigned by the Surgeon General. Opportunity is afforded for assignment in a wide range of professional activity including hospital, research and public health duty. Travel expenses incident to official business or change of station, including transportation of dependents and household effects, are paid by the government.

The Board of Examiners will be in the following places at 9 a. m. on the dates specified. Candidates should arrange to have their physical examination completed at any one of the following listed places on or before the date shown:

- February 5, 6, Boston (Brighton), Marine Hospital, 77 Warren Street.
- February 7, 8, 9, 10, New York (Stapleton, Staten Island), Marine Hospital.
- February 12, 13, Washington, U. S. P. H. S. Dispensary, Fourth and D streets S.W.
- February 14, 15, Baltimore, Marine Hospital, Wyman Park Drive and 31st Street.
- February 16, 17, Norfolk, Marine Hospital, Hampton Boulevard-Larchmont.
- February 21, 22, Savannah, Marine Hospital, York and Abercorn streets.
- February 23, Atlanta, Malaria Control in War Areas, 605 Volunteer Bldg.
- February 26, 27, Cleveland, Marine Hospital, Fairhill Road and E. 124th Street.
- February 28, Detroit, Marine Hospital, Windmill Pointe.
- March 1, 2, 3, Chicago, Marine Hospital, 4141 Clarendon Avenue.
- March 5, Washington, U. S. P. H. S. Dispensary, Fourth and D streets S.W.
- March 12, 13, 14, Kirkwood (near St. Louis), Marine Hospital, 525 Couch Avenue.
- March 15, Louisville, Marine Hospital, Portland Avenue and 22d Street.
- March 16, Lexington, U. S. P. H. S. Hospital, Leestown Pike, Lexington, Ky.
- March 17, Memphis, Marine Hospital, Delaware and California streets.
- March 19, 20, Fort Worth, U. S. P. H. S. Hospital.
- March 21, 22, Galveston, Marine Hospital, 45th Street and Avenue N.
- March 23, 24, New Orleans, Marine Hospital, 210 State Street.
- March 26, Mobile, Marine Hospital, St. Anthony and Bayou streets.
- March 28, Washington, U. S. P. H. S. Dispensary, Fourth and D streets S.W.
- April 3, 4, Los Angeles, U. S. P. H. S. Relief Station, 406 Federal Building.
- April 5, 6, 7, San Francisco, Marine Hospital, 14th Avenue and Park Blvd.
- April 10, 11, 12, Seattle, Marine Hospital, Judkins Street and 14th Avenue South.
- April 16, Minneapolis, Office of Indian Affairs, 218 Federal Building.
- April 18, Washington, U. S. P. H. S. Dispensary, Fourth and D streets S.W.
- April 23, 24, 25, Written examination.

Persons who complete the physical examination and certain other portions of the examination will be permitted to participate later in the three day written examination beginning April 23 either at the place where the physical examination was conducted or at some other nearer point.

Applicants may obtain application blanks by writing to the Surgeon General, U. S. Public Health Service, Bethesda Station, Washington 14, D. C. These forms may be filled out and delivered to the Board of Examiners or may also be obtained from the board at the time the applicant appears before the board. Applicants wishing to use National Board grades in lieu of written examination should present their certificates to the board. Applicants should bring their medical school diploma with them.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 9, 1944.

Surgery with the Parachute Troops

When parachute troops go into action behind enemy lines it may be some days before normal channels of casualty evacuation can be established. The medical services of the air borne formation are responsible for the medical and surgical care of casualties until contact has been made with the medical services of the supporting force. The *Army Medical Department Bulletin* states that two parachute surgical teams are attached to each field ambulance to make certain that efficient surgical aid is always available. A team consists of one surgeon and five orderlies; when it goes into action an anesthetist is attached. One of the orderlies looks after resuscitation and preoperative treatment, two are chosen for nursing ability, and all are endowed with the intelligence, temperament and physique required of all parachutists. All the men are trained so that they can do one another's duties; their capacity to improvise and adapt themselves has been an important factor in the success of these teams.

Equipment has been cut to essentials and is light enough to be easily handled in difficult country even under fire. A light operating theater, essential instruments, anesthetics, plaster, dressings, plasma, transfusion apparatus and fuel are carried. Loss of equipment in transit often calls for a good deal of improvisation. The essential instruments include two excision sets, extra abdominal and fracture sets, trays, bowls, dishes, a sterilizer and boiled water container. Linen thread is used for most suturing, but small quantities of atraumatic catgut and silkworm gut are included. As water supply is often a problem, collapsible containers are carried for storage. Heat and light are obtained from collapsible primus stoves, paraffin pressure lamps and electric headlamps. Feeders, bedpans and special ward equipment are also carried, but beds and bedding must be improvised on the spot.

Experience has already taught much: acriflavine tablets are the most economical and useful antiseptic for general use; only 11 of 150 cases in one operating session required any other anesthetic than pentothal alone; chloroform is preferable to ether for inhalation anesthesia because of the risk of fire. In 1 case a parachute surgical team functioned for two days in a farm building, the work being shared by two surgeons. In spite of a nearby battle, thirty-five operations were done in twenty-one hours operating time, with only two deaths. Chest, neck, head and limb wounds were treated. Two men with abdominal wounds could not be sufficiently resuscitated for operation. Four fifths of the casualties were operated on about five hours after they were wounded.

The Sinking of a German Hospital Ship

An official statement has been issued with regard to the sinking of the German hospital ship *Tuebingen* in the Adriatic on November 18 by allied aircraft. The German authorities have been notified that a full inquiry is proceeding, and an expression of regret from the British government has been conveyed. The *Tuebingen* was intercepted by a British destroyer west of Crete on October 27 in the course of evacuating German sick and wounded from Salonika to Trieste. In accordance with the Hague convention, these casualties, numbering 1,023, were removed and made prisoners of war, and the ship was released after examination with instructions to continue her voyage to Trieste. However, she put into the Yugoslav port of Bar and embarked an additional 337 sick and wounded. She was again intercepted and taken into the Italian port of Bari, and the

casualties were removed. She was again released on November 17 with instructions to sail to Trieste. Next day when off the Italian port of Pola she was sighted by air forces before sunrise. She was not illuminated, and in the poor light the flight leader was unable to identify her. He reported to base and asked for instructions. Owing to atmospheric conditions the message was received incorrectly and indicated to the controlling officer that a high speed launch had been sighted in the middle of the gulf of Venice. Having ascertained that no allied launch was in the neighborhood the controlling officer gave permission to attack. This was done, and the ship was sunk. It is understood that the casualties among the crew were very light. This appears to be the only case of the sinking of a German hospital ship in the five years of war. Unfortunately the same cannot be said of British hospital ships, nor can it be said that their sinking was by mistake.

Meeting of Foreign Doctors in London

The war has brought a large number of foreign doctors to this country, refugees from the part of Europe which was occupied by the Germans. We have done what we could to welcome them at medical societies and otherwise. With the liberation of Europe approaching completion, these men are hoping soon to return home. At the House of the British Medical Association what may be regarded as an informal farewell meeting was held and was attended by representatives of eight countries. Dr. Dain, chairman of the council, said that if there was a wider diffusion of the spirit that permeated medicine the prospects of future peace might be made secure. There were no frontiers to medical knowledge, no monopolistic restrictions to medical discoveries, he emphasized. If out of that meeting came a movement for giving permanent expression to the bonds which hold together doctors of different countries the British Medical Association would feel it a privilege to give all the help it could, Dr. Dain said. Dr. Alfred Cox, a former secretary of the British Medical Association, gave a short history of the Association professionnelle internationale des médecins and recalled how the proposal to hold the annual conference of 1938 in Prague was defeated by the German delegate, who considered this an insult to the master race. In reply the Norwegian minister of health, Dr. Karl Evang, said that in the new kind of world which they hoped to construct after the war medical services would be to some extent reconstructed also. The other foreign delegates present were Dr. C. Meissner, chairman of the Polish Medical Association, Dr. J. Ungar of Czechoslovakia, Col. C. F. Koch of the Dutch army, Dr. M. Selkin of Yugoslavia, Col. B. A. Osipov of the Soviet military mission and Dr. A. D. de Smet of Belgium.

Marriages

RICHARD NEWTON ABBOTT, West Newton, Mass., to Miss Myrtle Louise von Hagen of Middletown, Conn., October 28.

EDGAR LEE ETIER JR., Fort Worth, Texas, to Miss Patricia Catherine Nestrta of San Antonio, October 20.

MILTON LAWRENCE McCALL, Philadelphia, to Miss Jane Maxine French of Ardmore, September 30.

WILLIAM H. GEHRON JR. to Miss Betty Y. Schwocrer, both of Williamsport, Pa., October 7.

CHARLES BUNCH to Miss Sarah Elizabeth Sherrill, both of Charlotte, N. C., November 23.

WENDELL B. HOLMES, Tylertown, Miss., to Miss Joy Ratliff of McComb, November 5.

H. RAYMOND MUTCHLER, Dover, N. J., to Miss Flora B. Beebe, October 13.

JAMES J. SMITH to Miss Grace Louise Ruhl, both of Brooklyn, November 3.

ROBERT KAREN to Miss Helen Gregor, both of Milwaukee, September 10.

Deaths

Richard Frothingham O'Neil * Boston; Harvard Medical School, Boston, 1897; member of the House of Delegates of the American Medical Association in 1912 and chairman of the Section on Urology, 1920-1921; member of the International Society of Urology and the New England Surgical Society; member, formerly secretary and president of the American Association of Genito-Urinary Surgeons; member and past president of the American Urological Association; formerly secretary and president of the New England section of the American Urological Association; fellow of the American College of Surgeons; served in the Spanish-American War and World War I; specialist certified by the American Board of Urology, Inc.; served as genitourinary surgeon in the outpatient department at the Massachusetts General Hospital, where he later had been visiting genitourinary surgeon, associate urologist and since 1934 member of the board of consultation; formerly on the staff of St. Elizabeth's Hospital; author of a chapter on "Renal Tuberculosis" in "Cabot's Modern Urology"; died in December, aged 70.

Peter Irving * New York; Columbia University College of Physicians and Surgeons, New York, 1903; since 1937 secretary and general manager of the Medical Society of the State of New York; specialist certified by the American Board of Internal Medicine; member of the House of Delegates of the American Medical Association in 1938, 1939 and 1940; fellow of the New York Academy of Medicine and the American College of Physicians; member of the alumni association and consulting physician at the Roosevelt Hospital, where for many years he was lecturer on medical subjects to the undergraduates and from 1919 to 1937 physician to the training school; consulting physician to the Seton and New York hospitals; managing editor of the *New York State Journal of Medicine*; in 1943 appointed by Governor Dewey as a member of a commission to investigate the management and affairs of the department of mental hygiene of the state of New York; died in the Roosevelt Hospital December 28, aged 66.

John Minos Fermster Gill * Wichita Falls, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1889; captain, medical corps, U. S. Army, during World War I; psychiatrist on the board of examiners for the U. S. Army enlisting and induction station at Abilene, Texas, from March through July in 1942; at one time city physician at Burkburnett; formerly on the staffs of the Kings Daughters Hospital, Temple, Texas, Confederate Home Hospital, Austin, Abilene State Hospital, Abilene, San Antonio State Hospital, San Antonio, and the Rusk State Hospital, Rusk; retired Nov. 1, 1944 as a member of the staff of the Texas State Hospital; died in the Veterans Administration Facility, Waco, December 10, aged 76, of arteriosclerosis.

William Province Garshwiler * Indianapolis; Medical College of Indiana, Indianapolis, 1896; professor emeritus of urology and formerly clinical professor of genitourinary surgery at the Indiana University School of Medicine; specialist certified by the American Board of Urology, Inc.; member of the American Urological Association; fellow of the American College of Surgeons; served as consulting genitourinary surgeon, Indianapolis City, St. Vincent's and Robert W. Long hospitals, William H. Coleman Hospital for Women and the James Whitcomb Riley Hospital for Children; died at his home in Southport, Ind., December 10, aged 76, of cerebral hemorrhage.

Blanche M. Haines, Three Rivers, Mich.; Woman's Hospital Medical College, Chicago, 1886; formerly head of the division of maternal and infant hygiene of the U. S. Children's Bureau at Washington, D. C., and director of the Michigan Bureau of Child Hygiene and Public Health Nursing; served as city health officer, member and secretary of the board of education; member of the American Association of University Women, fellow and life member of the American Public Health Association; member of the Institute of American Genealogy and Daughters of the American Revolution; died November 9, aged 78.

Oscar Robert R. Troje * Fairfield, Ala.; University of Kansas School of Medicine, Kansas City, 1907; specialist certified by the American Board of Radiology, Inc.; member of the American Roentgen Ray Society, Radiological Society of North America, Inc., and the American College of Radiology; lieutenant commander, medical corps, U. S. Naval Reserve, not on active duty; for many years chief radiologist at the Employees' Hospital of the Tennessee Coal, Iron and Railroad Company, where he died December 12, aged 59, of cerebral hemorrhage.

Charles Francis Adams, Carthage, N. Y.; Bellevue Hospital Medical College, New York, 1893; member of the American Medical Association; formerly village president; died November 16, aged 76, of cerebral hemorrhage.

Eugene Thomas Alexander, Peoria, Ill.; Chicago Medical School, 1930; served overseas during World War I; on the staff of the John C. Proctor Hospital; died November 11, aged 50, of carcinoma of the liver.

Kenneth Hazen Aynesworth * Waco, Texas; University of Texas School of Medicine, Galveston, 1899; specialist certified by the American Board of Surgery; member of the Southern Surgical Association; fellow of the American College of Surgeons; regent of the University of Texas; on the staffs of the Hillcrest and Providence hospitals; died October 31, aged 71, of cerebral hemorrhage.

Elizabeth McKinley Beecroft, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1904; died in the Germantown Dispensary and Hospital September 10, aged 77, of fracture of the right hip received in a fall, and terminal pneumonia.

Manfredi Benanti, New York; Regia Università degli Studi di Palermo. Facoltà di Medicina e Chirurgia, Italy, 1894; died October 30, aged 76, of chronic myocarditis.

John Benjamin Bickers, Kansas City, Mo.; Medico-Chirurgical College of Kansas City, 1901; died in the Kansas City General Hospital October 17, aged 74, of cardiovascular disease and bilateral purulent bronchitis.

Milton M. Blair, Norwood, Colo.; (licensed in Colorado in 1902); died October 30, aged 71.

Orland Rossini Blair * Clarks Summit, Pa.; Yale University School of Medicine, New Haven, 1896; specialist certified by the American Board of Psychiatry and Neurology, Inc.; member of the American Psychiatric Association; served during World War I; chief resident physician at the Hillside Home and Hospital for Mental Diseases; died in the Moses Taylor Hospital, Scranton, October 21, aged 73, of diabetes mellitus.

William D. Bonifield, Warren, Ind.; Medical College of Ohio, Cincinnati, 1888; died November 8, aged 82, of uremia and aneurysm of the right popliteal artery.

Elbridge Maxwell Breniman * Ackley, Iowa; Rush Medical College, Chicago, 1899; died October 22, aged 73, of uremia and cardiovascular disease.

Joseph Theobald Brice, Cumming, Ga.; Atlanta Medical College, 1891; member of the American Medical Association; fellow of the American College of Surgeons; formerly on the staffs of the Grady and Georgia Baptist hospitals, Atlanta; died October 2, aged 78, of a malignant abscess on the right arm.

Robert C. Brookes, Waelder, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1894; died October 16, aged 79, of pyloric carcinoma.

Daniel Angus Bruce, Quincy, Mass.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1892; member of the American Medical Association; president of the Norfolk South District Medical Society, 1927-1928; member of the city school board from 1903 to 1915; on the staff of the Quincy City Hospital, where he died November 5, aged 81, of terminal pneumonia, cystitis and arteriosclerosis.

Daniel B. Bushong, Charles Town, W. Va.; Baltimore Medical College, 1893; on the staff of the Washington County Hospital, Hagerstown, Md., where he died October 30, aged 74, of acute coronary thrombosis with arteriosclerosis.

Thomas Porter Cole * Greensburg, Pa.; Jefferson Medical College, Philadelphia, 1893; fellow of the American College of Surgeons; served in the medical corps of the U. S. Army in France during World War I, holding the rank of major at the time of his discharge; for many years on the staff of the Westmoreland Hospital; died November 12, aged 73, of coronary thrombosis.

Oscar Edwin Coleman * Denver; Jefferson Medical College of Philadelphia, 1902; died in the Fitzsimons General Hospital September 28, aged 72, of carcinoma of the lung with metastasis to the liver.

John N. Constat * Washington, D. C.; Georgetown University School of Medicine, Washington, 1904; formerly demonstrator in anatomy, assistant clinical professor of surgery and associate clinical professor of surgery at his alma mater; member of the staffs of the Garfield and Gallinger hospitals; in recognition of his interest in public health in his native Greece received in 1937 the Order of the Golden Cross of Phoenix from the Greek minister in behalf of King George II of Greece; died December 6, aged 70, of coronary occlusion.

Robert Marquis Copeland, Vevay, Ind.; College of Physicians and Surgeons, Baltimore, 1888; member of the American Medical Association; died October 28, aged 83, of cerebral hemorrhage.

Corydon O. Dewey, St. Joseph, Mo.; Missouri Medical College, St. Louis, 1882; member of the American Medical Association; honorary member of the Missouri-Kansas Neuro-psychiatric Association; for many years surgeon for the Denver and Rio Grande Railroad in Utah; served on the staff of State Hospital number 2; died November 3, aged 83, of carcinoma of the liver.

Eli E. Dotson, Ramona, Calif.; State University of Iowa College of Medicine, Iowa City, 1901; veteran of the Spanish-American and World wars; died October 25, aged 71, of coronary heart disease.

Xenophon Best Dougherty Ⓢ Neoga, Ill.; Bennett Medical College, Chicago, 1915; on the visiting staff of St. Anthony's Hospital, Effingham; died October 24, aged 55, of coronary occlusion.

Schuyler Colfax Eubanks, Montgomery, Ala.; Medical College of Alabama, Mobile, 1902; for ten years connected with the city health department; died October 28, aged 75, of congestive heart disease, cardiovascular disease and pellagra.

George Benson Fenwick Ⓢ Chelsea, Mass.; Harvard Medical School, Boston, 1904; head of the medical division of civilian defense and examining physician of local board number 50; head examining physician of local schools; trustee of the Chelsea Savings Bank; president of the medical staff of the Chelsea Memorial Hospital; served on the board of health; died October 27, aged 66, of coronary thrombosis.

George William Firth, Philadelphia; Medico-Chirurgical College of Philadelphia, 1907; member of the American Medical Association; died September 17, aged 61, of chronic rheumatic endocarditis and cerebral embolism.

Alexander W. Fitzsimons, Omaha; University of Nebraska College of Medicine, Omaha, 1902; died in St. Catherine's Hospital October 23, aged 67, of coronary thrombosis.

Samuel Merriman Ford, Bluefield, W. Va.; Kentucky School of Medicine, Louisville, 1904; served during World War I; died in the Veterans Administration Facility, Roanoke, Va., October 18, aged 68, of acute cholecystitis and cholangitis.

Charles Henry French, Cedar Rapids, Iowa; St. Louis College of Physicians and Surgeons, 1904; member of the American Medical Association; died in the Mercy Hospital November 6, aged 73, of hypertensive heart disease.

Julius Raphael Globus Ⓢ Brooklyn; University and Bellevue Hospital Medical College, New York, 1915; on the staffs of the Beth Moses and Crown Heights hospitals; died in the Adelphi Hospital October 9, aged 59, of carcinoma.

Ludwig Bernhard Goldhorn, Mount Vernon, N. Y.; University and Bellevue Hospital Medical College, New York, 1908; served as chief roentgenologist at the Mount Vernon Hospital; died at his summer home in Redding, Conn., November 16, aged 73, of coronary thrombosis.

Leizer E. Grimberg, New York; Columbia University College of Physicians and Surgeons, New York, 1911; member of the American Medical Association; specialist certified by the American Board of Psychiatry and Neurology, Inc.; associate visiting neuropsychiatrist, Welfare Hospital for Chronic Diseases; formerly on the staffs of the Neurological Institute and the Bronx Hospital; examining psychiatrist at the induction center; died in Mount Vernon, N. Y., November 15, aged 60, of coronary thrombosis.

Paul Gronnerud Ⓢ Martin, Ky.; Kentucky School of Medicine, Louisville, 1898; at one time professor of gynecology, operative surgery and surgical anatomy at the Illinois Post-Graduate Medical School, Chicago; fellow of the American College of Surgeons; served during World War I; chief surgeon of the Methodist Hospital, Pikeville, for nearly twenty years; died in Pikeville October 22, aged 75, of angina pectoris.

Warren T. Heaps, Kewanee, Ill.; St. Louis University School of Medicine, 1906; member of the American Medical Association; served as president of the chamber of commerce; formerly chief of the staff of the Public Hospital and St. Francis Hospital, where he died November 4, aged 65, of influenza.

Lucia E. Heaton, Canton, N. Y.; Woman's Medical College of the New York Infirmary for Women and Children, New York, 1892; for many years medical examiner of women and trustee at St. Lawrence University; she served on the board of education of Canton; died October 15, aged 88, of coronary occlusion.

Erwin William Hollandt, Iliou, N. Y.; University of Rochester School of Medicine and Dentistry, Rochester, N. Y., 1933; member of the American Medical Association; served an internship at the Jersey City Hospital, Jersey City; died October 11, aged 35, of pyohydronephrosis, congenital single kidney and ureteral kinking.

John Henry Hubbard, Tarrant, Ala. (licensed in Mississippi in 1902 and Alabama in 1921); died November 4, aged 67, of mesenteric lymphosarcoma.

Vernon Rufus Jones, Gratz, Ky.; Kentucky School of Medicine, Louisville, 1907; member of the American Medical Association; died in Frankfort December 6, aged 62, of chronic myocarditis.

Lyman Greenleaf Kauffman, Dayton, Ohio; Jefferson Medical College of Philadelphia, 1924; senior urologist at the Miami Valley Hospital and the Dayton State Hospital; formerly on the staff of the Good Samaritan Hospital; visiting urologist at the Ohio Soldiers' and Sailors' Orphans' Home Hospital, Xenia; died November 12, aged 44, of hepatic sclerosis.

James Howard Kelley Jr. Ⓢ Springfield, Mo.; Washington University School of Medicine, St. Louis, 1925; served internships at City and City Isolation hospitals, St. Louis formerly resident physician at the Missouri-Kansas-Texas Railroad Employees' Hospital in Parsons, Kan.; died in Hurle, October 17, aged 47.

Benjamin Buel Kinne Ⓢ Middletown, N. Y.; American Medical Missionary College, Battle Creek, Mich., and Chicago 1904; medical superintendent and owner of the Middletown Sanitarium and Hospital, where he died October 5, aged 60 of coronary thrombosis.

Frank J. Lambeck, Milwaukee; Milwaukee Medical College, 1897; member of the American Medical Association; died in the Columbia Hospital October 13, aged 71, of carcinoma.

Hugh Monroe Longino, Mineral Wells, Texas; Medical Department of Tulane University of Louisiana, New Orleans 1870; Civil War veteran; died October 24, aged 100, of senility.

Henry Anton Loux, Sussex, N. J.; Long Island College Hospital, Brooklyn, 1908; member of the American Medical Association; on the staff of the Alexander Linn Hospital died in Greenville, N. Y., October 28, aged 63, of coronary occlusion.

Benjamin P. Magness, Gotebo, Okla.; University of Louisville Medical Department, Louisville, Ky., 1893; died in the Carnegie Hospital and Clinic, Carnegie, October 18, aged 73, of cerebral hemorrhage.

Earnest Craig McDonald Ⓢ Indianapolis; Indiana University School of Medicine, Indianapolis, 1931; served an internship at the Indiana University Hospitals; served during World War I; on the staffs of St. Vincent's Hospital and the Methodist Hospital, where he died October 23, aged 42, of uremia.

John Angus McDonald, East Machias, Maine; Jefferson Medical College of Philadelphia, 1886; member of the American Medical Association; served two terms in the state house of representatives and two terms in the senate; Washington County medical examiner for sixteen years; health officer in the Machias area for five years; served as superintendent of the schools at East Machias; died in the Calais Hospital, Calais, October 10, aged 78, of cerebral hemorrhage and bronchopneumonia.

Robert McGregor Ⓢ Saginaw, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1894; served as psychiatrist for the draft board of Saginaw; at one time professor of electrotherapeutics and associate professor of nervous and mental diseases at the Michigan College of Medicine and Surgery in Detroit; formerly on the staff of the Woman's Hospital; died in St. Mary's Hospital October 31, aged 83, of myocarditis.

Leo Louis Meininger, Palo Alto, Calif.; Cooper Medical College, San Francisco, 1898; member of the American Medical Association; formerly chief of the outpatient service, Mount Zion Hospital, San Francisco; died in the Palo Alto Hospital October 9, aged 74, of cerebral hemorrhage.

Frank Russell Miller Ⓢ La Grange, Ill.; Northwestern University Medical School, Chicago, 1900; died in the Wesley Memorial Hospital, Chicago, October 25, aged 72, of chronic myocarditis, adenoma of the left kidney and hemangioma of the liver.

Morris Moore, Walnut, Iowa; John A. Creighton Medical College, Omaha, 1901; member of the American Medical Association; died in Council Bluffs October 21, aged 70, of lobar pneumonia.

Albert S. Morton, Bay City, Texas; Louisville (Ky.) Medical College, 1897; died October 18, aged 73, of arterial hypertension and cerebral hemorrhage.

Edward Campbell Morton @ Chicago; Chicago Medical College, 1888; served during World War I; on the staff of the Englewood Hospital; died in the Veterans Administration Facility, Hines, Ill., November 25, aged 77, of uremia caused by pyelonephritis.

Frank M. Mulvaney, Marion, Wis.; Northwestern University Medical School, Chicago, 1904; member of the American Medical Association; veteran of the Spanish-American War; health officer; surgeon for the Chicago and Northwestern Railroad; on the staffs of the Community Hospital, New London, and the Mercy Hospital, Oskosh, where he died October 19, aged 69, of cerebral thrombosis and prostatic hypertrophy.

John Marshall Neely Sr., Lincoln, Neb.; Kentucky School of Medicine, Louisville, 1896; member of the American Medical Association; at one time member of the staff of the Bryan Memorial Hospital; served as examiner to the Missouri Pacific Railroad; died October 24, aged 74, of coronary thrombosis.

Dennis Lee Newton, Fort Madison, Iowa; Keokuk Medical College, Keokuk, Iowa, 1894; member of the American Medical Association; health officer of Fort Madison; died in the Burlington Protestant Hospital, Burlington, November 4, aged 79, of coronary occlusion.

Charles Calogero Panzarella, Buffalo; University of Buffalo School of Medicine, 1915; member of the American Medical Association; served during World War I; for many years on the staff of the Columbus Hospital, where he died October 24, aged 51, of coronary occlusion.

James Robinson Parker, Norfolk, Va.; Baltimore Medical College, 1898; died in the Norfolk General Hospital October 4, aged 69, of coronary occlusion.

Albert Amoss Patterson, Flint, Mich.; Detroit College of Medicine, 1909; veteran of the Spanish-American War; died November 19, aged 69, of cardiac insufficiency.

Louis Garrard Roberts, White Hall, Va.; University College of Medicine, Richmond, 1912; member of the American Medical Association; chairman of the Albemarle Board of Supervisors; died October 26, aged 54, of thrombosis.

Pleasant F. Robinson, Madill, Okla.; Gate City Medical College, Texarkana, Ark., 1907; at one time county health officer; died in McAlester August 11, aged 69.

Montgomery Gilbert Shipp, Anniston, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1900; member of the American Medical Association; on the staff of the Garner Hospital; died October 24, aged 65, of lobar pneumonia.

Benjamin O. Shook, Spencerville, Ind.; Miami Medical College, Cincinnati, 1902; formerly county coroner; died December 13, aged 74, of injuries received in an automobile accident.

Frederick Robertson Sims, Sandwich, Mass.; Harvard Medical School, Boston, 1902; member of the American Medical Association, American Psychiatric Association and the New England Society of Psychiatry; formerly assistant in neuropathology at his alma mater; captain in the medical corps of the U. S. Army in France during World War I; served as manager and chief medical officer at various Veterans Administration facilities for twenty-five years; died in Forestdale October 26, aged 65, of coronary occlusion.

Benjamin Franklin Slusher, Kansas City, Mo.; Barnes Medical College, St. Louis, 1897; died October 31, aged 73, of cerebral hemorrhage.

Frank Edward Smith @ New York; New York Homeopathic Medical College and Hospital, New York, 1904; formerly assistant professor of surgery at his alma mater; member of the American Society of Anesthetists, Inc.; died November 12, aged 62.

Frederick Kinsman Smith, Warren, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1883; died November 4, aged 86, of myocardial insufficiency.

Abraham Barr Snively @ Waynesboro, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; at one time physician in charge of the Blue Ridge Mountain Sanatorium, Blue Ridge Summit; instrumental in the establishment of the Waynesboro Hospital, serving as the first surgical chief

and a member of the staff; died October 3, aged 75, of subacute bacterial endocarditis.

George Heath Steele @ Belmond, Iowa; Rush Medical College, Chicago, 1910; part owner and medical superintendent of the Belmond Hospital; died November 15, aged 60, of heart disease.

Richard Stinson, Paterson, N. J.; Columbia University College of Physicians and Surgeons, New York, 1896; member of the American Medical Association; died October 8, aged 70, of cerebral thrombosis and cerebral arteriosclerosis.

George Tudor Thornhill, Bluefield, W. Va.; University of Virginia Department of Medicine, Charlottesville, 1894; director of the Flat Top National Bank; died November 9, aged 72, of coronary occlusion and carcinoma of the prostate.

Thomas B. Tompkins, Manitowoc, Wis. (licensed in Wisconsin in 1925); died in the Holy Family Hospital September 10, aged 77, of bronchopneumonia.

David Irving Torin, Pittsburgh; University of Pittsburgh School of Medicine, 1929; served an internship at the Montefiore Hospital; died September 27, aged 40, of coronary thrombosis and arteriosclerosis.

Palmer Townsend, Brooklyn; Long Island College Hospital, Brooklyn, 1890; on the staff of the Prospect Heights Hospital; died November 6, aged 78, of bronchopneumonia.

Adrian Xavier Urbanski @ Perth Amboy, N. J., Medical College of Virginia, Richmond, 1924; formerly city physician;

served an internship at the Newark City Hospital, Newark; attending surgeon at the Perth Amboy General Hospital; died in the Stephen V. Harkness Pavilion for Private Patients, New York, November 9, aged 46, of hypertensive cardiovascular disease.

Frederick Gordon Whamond, Chicago; George Washington University School of Medicine, Washington, D. C., 1908; died November 12, aged 79.

Hilard Elbert Whitlock @ Tusculumbia, Ala.; University of Tennessee College of Medicine, Memphis, 1931; on the staff of the Colbert County Hospital, Sheffield, where he died November 2, aged 43, of pulmonary embolism, following a gunshot wound of the chest (homicide).

Joseph L. Wiza, Philadelphia; Medico-Chirurgical College of Philadelphia, 1902; died October 25, aged 67, of coronary occlusion.

Harry Clanton Woodard, Louisville, Ky.; Louisville Medical College, 1902; served during World War I; preventive clinic physician for the city health department; died in St. Joseph Infirmary November 13, aged 68, of abdominal carcinoma.

Benjamin Franklin Woolery @ Louisville, Ky.; Hospital College of Medicine, Louisville, 1902; died November 2, aged 66, of coronary occlusion.

Clyde Mansford Zink, Clinton, Ind.; University of Louisville School of Medicine, Louisville, Ky., 1913; member of the American Medical Association; formerly mayor of Clinton and coroner of Vermillion County; served during World War I; died November 7, aged 57, of heart disease and acute nephritis.

KILLED IN ACTION

Kenneth Patterson Swafford, Madison, Wis.; University of Wisconsin Medical School, Madison, 1942; served an internship at the California Hospital in Los Angeles; commissioned a first lieutenant in the medical corps, Army of the United States, on June 1, 1942; began active duty on Aug. 21, 1943; later promoted to captain; killed in action in France, July 26, 1944, aged 27.

Rubin Evans, New York; Université de Lausanne Faculté de Médecine, Switzerland, 1941; served an internship at the Israel Zion Hospital in Brooklyn; commissioned a first lieutenant in the medical corps, Army of the United States, on Aug. 22, 1942 and began active duty on Sept. 3, 1942; killed in action in Italy May 15, 1944, aged 27. [It has been impossible to obtain a photograph of Dr. Evans.]



CAPT. KENNETH P. SWAFFORD
M. C., A. U. S., 1916-1944

Council on Medical Education and Hospitals

APPROVED SCHOOLS FOR X-RAY TECHNICIANS

The Essentials of an Acceptable School for X-Ray Technicians were adopted by the House of Delegates of the American Medical Association during the June 1944 session and were

published in THE JOURNAL, June 24, 1944. In accordance with these Essentials a survey was made of existing schools. The American Registry of X-Ray Technicians and the American College of Radiology have extended their cooperation in the formation of the Essentials and in the survey of schools. Although this is the first published list of approved schools, other training programs for x-ray technicians will be added when it has been determined that they fulfil the Essentials.

The following schools substantially conform to the minimum requirements and have been approved by the Council on Medical Education and Hospitals:

APPROVED SCHOOLS FOR X-RAY TECHNICIANS Council on Medical Education and Hospitals of the American Medical Association

Name and Location of School	Entrance Requirements	Length of Training in Months	Maximum Enrollment	Classes Begin	Tuition	Certificate, Diploma, Degree
CALIFORNIA						
California Hospital, Los Angeles *	High school graduate	24	6	Jan., July	\$ 50	Diploma
College of Medical Evangelists, Los Angeles *	High school graduate	12	6	Every 2 mos.	\$100	Certificate
Mercy Hospital, Sacramento *	High school graduate	12	4	Jan., July	None	Diploma
COLORADO						
Colorado General Hospital, Denver	1 year college	12	6	Every 2 mos.	None	Certificate
St. Anthony's Hospital, Denver	High school graduate	12	4	Varies	None	Diploma
St. Luke's Hospital, Denver	High school graduate	12	2	Varies	None	Certificate
CONNECTICUT						
Grace Hospital, New Haven	High school graduate	12	6	Quarterly	None	Certificate
New Haven Hospital, New Haven *	High school graduate	12	2	Varies	None	Certificate
GEORGIA						
Crawford W. Long Memorial Hospital, Atlanta	2 years college	12	3	Varies	None	Certificate
Georgia Baptist Hospital, Atlanta	2 years college	12	2	Varies	None	Certificate
Grady Memorial Hospital, Atlanta *	High school graduate	12	3	Every 4 mos.	None	Diploma
Piedmont Hospital, Atlanta	1 year college	12	2	Varies	None	Certificate
University Hospital, Augusta *	High school graduate	12	6	Varies	None	Certificate
IDAHO						
St. Alphonsus Hospital, Boise	1 year college or R.N.	12	2	Fall and Spring	\$100	Diploma
St. Luke's Hospital, Boise	1 year college	15	2	June	None	Certificate
ILLINOIS						
St. Joseph's Hospital, Alton *	High school graduate	18	2	Jan., Aug.	\$150	Certificate
Augustana Hospital, Chicago	Registered nurse	12	2	Fall and Spring	None	Diploma
Chicago Memorial Hospital, Chicago *	High school graduate	12	5	Varies	None	Diploma
Edgewater Hospital, Chicago *	High school graduate	12	6	Every 6 mos.	\$100	Diploma
Englewood Hospital, Chicago	1 year college	12	3	Every 6 mos.	None	Certificate
Evangelical Hospital, Chicago	1 year college	12	3	Every 6 mos.	None	Certificate
Michael Reese Hospital, Chicago	2 years college or R.N.	18	4	April, Oct.	None	Certificate
Chicago	High school graduate	12	6	Jan., June	None	Certificate
Chicago	High school graduate	24	2	Fall and Spring	None	Diploma
Chicago	1 year college	12	2	Every 6 mos.	None	Certificate
Chicago	1 year college	12	3	Every 6 mos.	None	Certificate
Chicago	1 year college	18	3	Varies	\$50	Diploma
Chicago	2 years college or R.N.	24	3	Varies	None	Certificate
Hospital, Chicago	High school graduate	18	4	Jan., May, Sept.	None	Certificate
Woodlawn Hospital, Chicago	High school graduate	12	2	Sept.	\$100	Certificate
John C. Proctor Hospital, Peoria	High school graduate	12	3	Fall and Spring	\$25	Certificate
St. Anthony's Hospital, Rockford *	High school graduate	12	2	June	None	Certificate
Swedish-American Hospital, Rockford	High school graduate	12	2	June	None	Certificate
St. John's Hospital, Springfield	2 years college	12	4	Quarterly	\$50	Certificate
INDIANA						
....., East Chicago	High school graduate	12	6	Quarterly	\$100	Diploma
....., Terre Haute	High school graduate	12	2	Jan., July	None	Diploma
....., Terre Haute	2 years college or R.N.	12	2	June, Sept.	\$50	Certificate
IOWA						
Mercy Hospital, Cedar Rapids	2 years college	16	2	Jan., June	None	Certificate
St. Luke's Methodist Hospital	2 years college	12	2	June	None	Certificate
University Hospitals, Des Moines	High school graduate	12	6	Jan., May, Sept.	None	Diploma
St. Joseph Mercy Hospital, Sioux City	High school graduate	24	2	March	None	Diploma
KANSAS						
University of Kansas School of Medicine, Kansas City	College grad. or R.N.	12	6	Jan., July	None	Certificate
LOUISIANA						
Shreveport Charity Hospital, Shreveport *	1 yr. coll. or 2 yrs. nursing	18	5	Varies	None	Dipl. & Cert.
MASSACHUSETTS						
Massachusetts Memorial Hospitals, Boston	2 years college or R.N.	12	3	Varies	None	.....
Lawrence General Hospital, Lawrence *	High school graduate	12	2	Feb., Sept.	None	.....
St. Luke's Hospital, Northfield	High school graduate	12	2	May, Dec.	None	Diploma
St. Luke's Hospital, Northfield	High school graduate	12	2	March, Oct.	None	Diploma
St. Vincent's Hospital, Northfield	High school graduate	12	2	Feb., Sept.	None	Certificate
MICHIGAN						
Lella Y. Post Montgomery Hospital, Battle Creek	High school graduate	24	4	Jan., July	None	Certificate
Mt. Carmel Mercy Hospital, Detroit	2 years college	24	6	Quarterly	\$100	Cert. & B.S.
St. Mary's Hospital, Detroit *	High school graduate	12	6	Sept.	\$125	Diploma
MINNESOTA						
St. Luke's Hospital, Duluth	High school graduate	12	4	Jan., July	None	Cert. & B.S.
St. Mary's Hospital, Duluth	2 years college or R.N.	12	4	March, Sept.	None	Diploma
St. Mary's Hospital, Minneapolis *	High school graduate	12	4	April, Oct.	None	Certificate
St. Mary's Hospital, Minneapolis	2 years college	12	6	Every 2 mos.	\$125	Certificate
Swedish Hospital, Minneapolis	2 yrs. college or nursing	12	12	Monthly	Univ. fees	Cert. or B.S.
University of Minnesota Hospitals, Minneapolis	High school graduate	12	4	Varies	None	Certificate
Bethesda Hospital, St. Paul	High school graduate	12	4	Varies	None	Diploma
Charles T. Miller Hospital, St. Paul	High school graduate	12	2	Varies	None	.....
St. Joseph's Hospital, St. Paul	High school graduate	12	2	Varies	None	.....

APPROVED SCHOOLS FOR X-RAY TECHNICIANS—Continued
Council on Medical Education and Hospitals of the American Medical Association

Name and Location of School	Entrance Requirements	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition	Certificate, Diploma, Degree
MISSOURI						
Research Hospital, Kansas City.....	1 yr. coll. or 2 yrs. nursing	12	6	Jan., July	None	Certificate
St. Luke's Hospital, Kansas City *.....	High school graduate	12	4	Quarterly	\$25	Certificate
De Paul Hospital, St. Louis.....	High school graduate	12	2	Varies	\$150	Certificate
St. Louis University School of Nursing, St. Louis *.....	High school graduate	4 yrs.	..	Every semester	\$250 yr.	Dipl. & B.S.
NEBRASKA						
Creighton Memorial St. Joseph's Hospital, Omaha.....	High school graduate	24	4	Sept.	\$200	Certificate
University of Nebraska College of Medicine, Omaha.....	High school graduate	12	2	Jan., July	\$75	Certificate
NEW HAMPSHIRE						
Mary Hitchcock Memorial Hospital, Hanover.....	2 years college or R.N.	12	2	Jan., July	\$50	Certificate
Laconia Hospital, Laconia *.....	1 yr. coll. or 1 yr. nursing	12	5	Varies	None	Certificate
NEW JERSEY						
Jersey City Medical Center, Jersey City *.....	High school graduate	12	8	Varies	None	Certificate
NEW YORK						
Albany Hospital, Albany *.....	High school graduate	24	3	Sept.	\$700 ^a	Certificate
Edward J. Meyer Memorial Hospital, Buffalo *.....	High school graduate	24	6	Jan., July	\$25 ^b	B.S.
New York Hospital, New York *.....	High school graduate	18	13	April, Oct.	\$700 ^c	Diploma
NORTH CAROLINA						
Duke University School of Medicine, Durham *.....	College degree or R.N.	12	3	Every 4 mos.	\$25 ^d	Diploma
NORTH DAKOTA						
Trinity Hospital, Minot *.....	2 years college or R.N.	12	2	Feb., Sept.	None	.....
OHIO						
City Hospital, Akron *.....	High school graduate	12	4	Quarterly	None	Diploma
Cincinnati General Hospital, Cincinnati *.....	High school graduate	12	3	Varies	\$50	.....
City Hospital, Cleveland *.....	High school graduate	12	6	Every 2 mos.	\$100	.....
Mount Sinai Hospital, Cleveland.....	High school graduate	12	2	March, Oct.	\$100	Dipl. & Cert.
University Hospitals, Cleveland *.....	High school graduate	12	8	Every 6 wks.	\$100	Certificate
Good Samaritan Hospital, Dayton *.....	High school graduate	24	2	Fall	None	.....
Miami Valley Hospital, Dayton *.....	High school graduate	12	3	Quarterly	None	Certificate
Huron Road Hospital, East Cleveland *.....	High school graduate	12	2	Jan., July	\$100	Diploma
Youngstown Hospital, Youngstown.....	1 year college	12	3	Varies	None	Certificate
OKLAHOMA						
St. Anthony's Hospital, Oklahoma City.....	High school graduate	12	2	Fall and Spring	None	Certificate
University Hospitals, Oklahoma City *.....	High school graduate	12	2	Varies	None	Certificate
St. John's Hospital, Tulsa *.....	High school graduate	24	2	Varies	None	Certificate
OREGON						
University of Oregon Medical School, Portland *.....	High school graduate	12	8	Varies	None	Certificate
PENNSYLVANIA						
Geo. F. Geisinger Memorial Hospital, Danville *.....	High school graduate	12	..	July	None	Certificate
Fitzgerald-Mercy Hospital, Darby.....	High school graduate	12	2	July, Dec.	None	Certificate
Conemaugh Valley Memorial Hospital, Johnstown.....	Registered nurse	12	3	Sept.	None	Certificate
Graduate Hosp. of the Univ. of Pennsylvania, Philadelphia *.....	High school graduate	24	6	Varies	\$150	Certificate
Hospital of the University of Pennsylvania, Philadelphia *.....	College graduate or R.N. ^e	12	15	Sept.	\$125	Certificate
Jefferson Medical College Hospital, Philadelphia.....	High school graduate	24	20	Jan., July	None	Certificate
Philadelphia General Hospital, Philadelphia.....	High school graduate	14	30	Feb., Sept.	None	Diploma
Wilkes-Barre General Hospital, Wilkes-Barre *.....	High school graduate	12	4	Every 6 mos.	None	Certificate
SOUTH CAROLINA						
Tuomey Hospital, Sumter *.....	1 year college	12	2	Varies	\$50	Dipl. & Cert.
TENNESSEE						
Knoxville General Hospital, Knoxville.....	High school graduate	12	2	Jan., July	None	Certificate
Meharry Medical College, Nashville *.....	2 years college	18	2	Every 9 mos.	\$75 yr.	Certificate
TEXAS						
Hotel Dieu Hospital, Beaumont.....	1 year college or R.N.	12	4	June, Sept.	\$10	Certificate
Baylor University Hospital, Dallas.....	2 years college	12	4	Jan., June	\$100	Certificate
Parkland Hospital, Dallas *.....	High school graduate	12	6	Every 6 mos.	None	Certificate
St. Paul's Hospital, Dallas *.....	High school graduate	12	4	Feb., Aug.	None	Certificate
University of Texas School of Medicine, Galveston *.....	High school graduate	12	8	Quarterly	\$10	Certificate
St. Joseph's Infirmary, Houston.....	High school graduate	24	4	Every 6 mos.	None	Certificate
VIRGINIA						
Medical College of Virginia Hospital Division, Richmond....	High school graduate	12	4	Varies	None	.....
St. Luke's Hospital, Richmond.....	High school graduate	12	2	Jan., July	None	.....
WEST VIRGINIA						
Kanawha Valley Hospital, Charleston.....	High school graduate	12	1	Fall	None	Certificate
McMillan Hospital, Charleston.....	High school graduate	12	1	Nov.	None	Diploma
St. Francis Hospital, Charleston.....	High school graduate	12	1	Fall	None	Certificate
WISCONSIN						
Madison General Hospital, Madison *.....	High school graduate	12	3	Every 4 mos.	None	Certificate
University of Wisconsin Medical School, Madison *.....	High school graduate	12	10	Every 6 wks.	Univ. fees	Certificate
Columbia Hospital, Milwaukee.....	High school graduate	24	3	Varies	None	Diploma
Mount Sinai Hospital, Milwaukee *.....	1 year college	12	4	Quarterly	\$200	Diploma
St. Joseph's Hospital, Milwaukee.....	High school graduate	24	4	Quarterly	\$25	Certificate

* Male students are admitted.

a. Degree from Mercy College, Detroit.

b. Students working for B.S. degree are required to spend three years at Hamline University, St. Paul, and one year at hospital.

c. High school graduates enrolled in degree course spend three years at University of Minnesota and one year at hospital.

d. Students are paid a monthly stipend of \$25 for second six months and \$50 a month during second year.

e. High school graduates enrolled in degree course spend three years at the University of Buffalo and one year at hospital.

f. During second six months students receive a stipend of \$25 a month and in last six months, \$50 a month.

g. High school graduates accepted for twenty-four months' training; tuition, \$150.

Correspondence

IDENTICAL TWINS

To the Editor:—In an editorial comment in *THE JOURNAL*, Dec. 2, 1944 you call attention to a highly interesting observation on the Gilcs identical twins, namely the remarkable resemblance to each other in the successive steps of their intellectual development and accomplishment. To a geneticist this information is certainly of interest. I wish to add to the striking resemblance in all such cases of normal life instances in pathologic life of identical twins.

In a contribution presented at the May 1925 meeting of the Philadelphia Psychiatric Society (*Am. Med.* 20:603 [Oct.] 1925) I submitted in great detail records of two pairs of twins. Briefly, one group consisted of two brothers who showed equal intellectual ability. At the age of 19 one commenced to show signs of psychotic disorder, namely negligence at work, paroxysms of violent anger, sleeplessness, then carelessness with regard to his clothes, gradual loss of interest in everything and finally hypochondriacal delusions with hallucinations.

His brother at about the same time developed at first a state of depression and became very irritable, apathetic and indolent. Soon he became delusional and hallucinatory. The condition of the two brothers remained unaltered for eight months. Both had short periods of remission but no complete recovery.

The second pathologic example of identical twins concerned two sisters. At the age of 10 and 14 they had short periods of mental depression. At the age of 18, following the death of their father and because of inability of the mother to support them, they were sent away, each to a different relative. In about a year one began to show signs of depression, which at times would become so profound that attempts at self destruction were made. The sister, after a period of eighteen months, showed also signs of depression alternating with periods of maniacal excitement. Neither of the two made a complete recovery.

The two examples of pairs of identical twins in pathologic states, the first in dementia precox, the second in manic-depressive psychosis, are impressive, demonstrating the fact that resemblance may be not only of a morphologic but also of a morbid psychologic character. Emphasis may be laid on the fact that similar physical organizations of the nervous system may lead to similar pathologic disorders. The occurrence of such a deep parallelism speaks strongly in favor of single ovum twins, especially when the two are of the same sex. We are dealing here either with an intrinsically abnormal ovum or with a normal ovum fertilized by an abnormal spermatozoon by division. From the genetic standpoint identical twins are indeed the same individual in two bodies.

ALFRED GORDON, M.D., Philadelphia.

HERNIATION OF INTERVERTEBRAL DISKS

To the Editor:—I am writing to ask that proper credit be given for the manipulation treatment described and illustrated in my article on "Diagnosis of Herniation of Lumbar Intervertebral Disks by Neurologic Signs" in the December 2 issue of *THE JOURNAL*. In my article Dr. Abts was quoted as saying that the method was not original but the reference could not be found. Since publication, a letter from Dr. B. S. Troedson of Orange, N. J., has called my attention to his presentation of this method in the *Archives of Physical Therapy, X-Ray, Radium* (18:10 [Jan.] 1937) titled "Lumbosacral Derangement and Its Manipulative Treatment."

J. JAY KEEGAN, M.D., Omaha.

OIL BURNER FUMES AND CANCER OF THE LUNG

To the Editor:—Apropos of the editorial comment in *THE JOURNAL* November 25 (p. 838) I have tried to obtain data on the possible contribution of oil burner fumes to cancer of the lung. It seems unquestionable that such form of cancer is increased, leaving, of course, aside the old question of Bloodgood as to whether better diagnosis is involved, but the significant rise in such diagnoses invites one to try to correlate such factors as newer sources of carcinogenic materials. The suggestion that tar used on the highways has been an ever increasing source of such substances is scarcely valid for two reasons: (1) the use of tar is decreasing each year; (2) increase in lung cancer has occurred among Canadians living far from roads on which tar is used. Whether any one has given attention to oil burner fumes, poured in immense amounts into our atmosphere, is the question. The use of crude oil has increased and combustion is incomplete. It is a possible valid suggestion.

WITHROW MORSE, PH.D., New York.

PENICILLIN: A FORECAST FORTY-ONE YEARS BEFORE!

To the Editor:—The following extract is a curious illustration of this, and also of the fact that the practical usefulness of an observation depends on its practical use! In Pflüger's *Archiv* of 1888, volume 43, there is an "arbeit" by Max Bierfreund, working on rigor mortis in the Physiologic Institute of Königsberg in Prussia, under the inspiration of L. Hermann. One of his points was that the resolution of the rigor is not due to putrefaction. As an evidence he cites an instance of rabbit muscles which gave no sign of putrefaction after six to eight days, and in explanation he remarks (page 212): "Mold fungi, which flourish excellently on acid mediums, appeared on the muscles on the second day and multiplied so rapidly that the muscles were soon enveloped as by a white mantle. The mold fungi, in their turn, had prevented the development of putrefactive organisms."

TORALD SOLLMANN, M.D., Cleveland.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and board of examiners in the basic sciences were published in *THE JOURNAL*, December 30, page 1168.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Part I. Various centers, Feb. 19-21. Part III. Boston, Jan. 23-25. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: New York, June 8-9. Final date for filing application is March 12. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: Spring. Final date for filing application is Feb. 1. Sec., Dr. Paul C. Bucy, 912 S. Wood St., Chicago 12.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written*. Part I. Various centers, Feb. 3. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, June 5-8. Final date for filing application is March 1. Chicago, Oct. 3-6. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City, Ia.

AMERICAN BOARD OF PEDIATRICS: Chicago, May 19-20. Final date for filing application is Jan. 19. Sec., Dr. C. A. Aldrich, 115½ First Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral*. New York, June 3. Final date for filing application is May 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: Various centers, March 20. Final date for filing application is Jan. 15. Sec., Dr. J. S. Rodman, 225 S. Fifteenth St., Philadelphia 2.

AMERICAN BOARD OF UROLOGY: *Oral*. Chicago, Feb. 19-22. Sec., Dr. G. J. Thomas, 1409 Willow St., Minneapolis 4.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts (West Virginia): Compensability of Silicosis.—Staples was employed for about twelve years in four different mines operated by the employer and was inducted into the United States armed forces in May 1942. He was discharged from service about seven and a half months later suffering from silicosis. He was advised that he should not work in a mine and secured other employment. He instituted proceedings under the workmen's compensation act of West Virginia, alleging that the silicosis from which he was suffering was contracted from his previous employment. The compensation commissioner of West Virginia made findings on the nonmedical questions involved in the case and referred the matter, so far as the medical aspects were concerned, as is required by the workmen's compensation act, to the silicosis medical board, which, after examination and investigation, reported findings and conclusions to the commissioner, who then made an award for silicosis in the second stage. The stages of silicosis compensable under the West Virginia compensation act are defined therein as follows:

"An employee shall, for the purposes hereof, be deemed to have silicosis: (1) In the first stage when it is found by the commissioner that the earliest detectable specific signs of silicosis are present whether or not capacity for work is or has been impaired by such silicosis; (2) In the second stage when it is found by the commissioner that definite and specific physical signs of silicosis are present, and that capacity for work is or has been impaired by that disease; . . ." (Acts, 1935, chapter 79, section 7).

The employer made timely objections to the findings and the award, and a hearing was held on those objections. At that hearing it appeared that the claimant suffered from shortness of breath, asthmatic sounds in his chest and limited chest expansion. A roentgenogram of his chest showed nodular formations in the middle two thirds of his lungs. One member of the silicosis medical board testified that he believed that silicosis in any stage impaired the capacity to work in a person suffering from that disease. The two other members of that board testified that their examination demonstrated physical signs of silicosis in the second stage, one of those physicians indicating that he relied entirely on the condition of the lungs as shown by the roentgenogram. Two physicians, who had examined the claimant and who were called on behalf of the employer, testified that the claimant was suffering from first stage silicosis rather than from the second stage of that disease, basing their conclusion on roentgenographic examination and their inability to demonstrate an impairment of the claimant's capacity to work. The commissioner affirmed his former finding, and on appeal the workmen's compensation appeal board affirmed the order of the commissioner. The employer then appealed to the Supreme Court of Appeals of West Virginia.

The employer contended that there was no evidence adduced at the hearing to justify the board's findings, arguing that there were no definite and specific physical signs of silicosis shown unless the roentgenographic examination may be so considered and that there was no showing of impairment of the claimant's capacity to work. The employer inveighed against the use of a roentgenogram as sufficient to show the "definite and specific physical signs" of silicosis as required by the statute quoted. We do not agree with that contention, said the court. The x-ray is of great value in medical science and affords a basis for a reasonably definite diagnosis of certain diseases with which persons are afflicted. The court then went on to discuss provisions in the compensation act relating to the use of x-ray when a claim for compensation for silicosis is made. An applicant for benefits for disablement from that disease, the court continued, by statute must submit to examination by x-ray, if required by the silicosis board (Acts, 1935, chapter 79, section

13). Reports of examination by x-ray made by physicians acting on behalf of a claimant or his employer, if in possession of either or under his control, are required to be produced as evidence on reference to the board, and the board is required to file such reports with the commissioner (*ibid.*, sections 13 and 14). It is quite clear from a casual reading of the statute that the legislature attached importance to the use of x-ray in ascertaining whether a claimant for benefits on account of a silicotic condition is actually suffering from that disease. The use of x-rays in examination of persons allegedly suffering from silicosis is indicated by the following excerpt from *Attorneys' Textbook of Medicine*, ed. 2, Gray, at page 1068:

The changes within the lung upon inhalation of minute silica particles, due to their destructive action, may best be demonstrated during life by the x-ray.

The use of the x-ray to determine the condition of the internal organs of living persons is a means to an end rather than the end itself. The roentgen photographs obtained by the use of such rays is a portrayal of the physical condition, which become definite and specific physical signs to a person experienced and learned in the science of roentgenology. Without taking the statutory definition into consideration, continued the court, there is convincing evidence in the record that from a pathologic standpoint there is a marked difference in the appearance of the lungs of a person suffering from silicosis in the first stage and that of a person suffering from that disease in the second stage. It suffices to say that the x-ray examination of the claimant demonstrates definite and physical signs of silicosis in its second stage, but the second statutory requirement relating to the impairment of capacity to work does not appear from such examination, nor does it necessarily follow that such impairment exists by reason thereof. However, we believe that sufficient definite and physical signs of silicosis may, in some instances, appear from an x-ray examination and show the disease as sufficiently advanced that impairment of working capacity is clearly indicated. Such, however, is not the case here. There is no convincing evidence that the claimant's capacity to work was impaired. There was no evidence as to lack of energy, lassitude, serious shortness of breath or other physical impairment. It is true that all members of the board testified that in their opinion claimant's capacity to work was impaired. One member stated that in his opinion a person suffering from any stage of silicosis suffered such impairment. The other two members of the board gave a generalized opinion that claimant's capacity to work was impaired, basing their opinion on the condition of claimant's lungs as disclosed by the roentgenogram. On the other hand, there is positive, unequivocal testimony by the two physicians called for the employer that the employee suffered no impairment in his working capacity. We do not mean to say or imply that impairment of working capacity cannot be shown solely by a roentgenogram, but we are constrained to say that such impairment must be shown to be substantial and practical rather than slight and theoretical. It is probably correct from a scientific standpoint to say that any disease in its earliest stages diminishes the working capacity of the afflicted person, but we think that when measured by the plain import of the statute such capacity as may have been possessed by a person prior to the onset of the disease must be so lessened that the afflicted person is in a measure disabled from doing the work he was theretofore capable of doing. The statute, obviously, does not require that a person be totally disabled from doing any work, but it must appear that claimant's capacity for work is or has been actually impaired in such a degree as to lessen his ability to perform the duties incident to ordinary work. The impairment of claimant's capacity to work is not shown in the record, since there is no sufficient factual premise for the conclusion stated by the members of the silicosis medical board that there was an impairment of capacity.

The court accordingly reversed the award of compensation and remanded the case for the production of further evidence with respect to the impairment of the claimant's capacity to work.—*Staples v. State Compensation Commissioner*, 31 S. E. (2d) 433 (W. Va., 1944).

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1935 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

14:85-108 (Oct.) 1944

- Chronic Bronchitis in Aged. J. F. Alison.—p. 85.
Preliminary Report of Blood Testing, as Required by Alabama Law in First Three Counties Surveyed. W. H. Y. Smith, D. G. Gill and S. R. Damon.—p. 86.
Medical Education in Alabama and Mississippi. S. Harris.—p. 93.
Sterility, with Special Reference to Gynecology. T. J. Payne Jr.—p. 96.
Ocular Therapy for General Practitioner. E. R. Nodine.—p. 98.

American Journal of Diseases of Children, Chicago

68:231-300 (Oct.) 1944

- Completely Supplemented Evaporated Milk and Its Use as Food for Infants. E. V. McCollum and W. Grubb.—p. 231.
*Bactericidal Action of Penicillin on Bacteria Commonly Present in Infections of Urinary Tract, with Special Reference to *Streptococcus fecalis*. H. F. Helmholz and C. Sung.—p. 236.
Roentgenographic Appearance of Esophagus in Normal Infants. H. Bakwin, Eleanor Galenson and B. E. LeVinc.—p. 243.
Role of Hemoagglutinins Anti-A and Anti-B in Pathogenesis of Jaundice of Newborn (*Icterus Neonatorum Precox*). I. Halbrecht.—p. 248.
Better Help for Speech Beginnings. Edna Hill-Young.—p. 250.
Bone Marrow as Alternate Route for Transfusion in Pediatrics. H. A. Reisman and I. A. Tainsky.—p. 253.
Reserves, Absorption and Plasma Levels of Vitamin A in Premature Infants. T. H. Henley, Margaret Dann and W. R. C. Golden.—p. 257.
Convulsions Experimentally Produced in Dogs. H. M. Keith, H. E. Essex and C. F. Schlotthauer.—p. 265.

Bactericidal Action of Penicillin on Bacteria Present in Urinary Infections.—Helmholz and Sung point out that penicillin appears in much higher concentrations in urine than in any other body fluids; its concentration in the blood never approaches that found in the urine. With a normal renal function an output in the urine of 58 per cent of the 40,000 to 100,000 units of injected penicillin a day should give a concentration of from 20 to 60 units per cubic centimeter in the urine. In view of these high concentrations attainable in the urine, it would seem logical to infer that penicillin would be an ideal urinary antiseptic. The authors describe *in vitro* studies on the bacterial flora encountered in infections of the urinary tract. Thirty strains of *Streptococcus fecalis*, 39 strains of *Escherichia coli*, 13 strains of *Proteus ammoniae*, 18 strains of *Aerobacter aerogenes*, 3 strains of *Pseudomonas aeruginosa* and 11 strains of *Staphylococcus aureus*, all originally isolated from the urine of patients with various infections of the urinary passages, were employed in these experiments. It was found that for *Str. fecalis* a concentration of 3 Oxford units of penicillin per cubic centimeter of urine is bactericidal; for *Pr. ammoniae* 8 units per cubic centimeter of urine is the minimal bactericidal concentration of penicillin; for *Esch. coli* there seems to be a line of demarcation between the resistant and the susceptible strains at a level of 30 Oxford units of penicillin per cubic centimeter of urine. *A. aerogenes* and *Ps. aeruginosa* are very resistant to the action of penicillin. *Staph. aureus* has served satisfactorily in this investigation as a control for the other organisms under study as to their respective resistance and susceptibility toward the action of penicillin. The growth of this organism itself is inhibited at a concentration of 0.033 Oxford unit of penicillin per cubic centimeter of urine. The bactericidal action of penicillin at the low level of its concentration in urine presents therapeutic possibilities for the treatment of infections due to *Staph. aureus*, *Str. fecalis* and *P. ammoniae*. The resistance of *Esch. coli*, *A. aerogenes* and *Ps. aeruginosa* to penicillin practically rules it out as a means of treating these infections.

American Journal of Ophthalmology, Cincinnati

27:1063-1192 (Oct.) 1944. Part 1

- Effect of Chemotherapeutic Agents on Cell Division and Healing of Corneal Burns and Abrasions in Rat. G. K. Smelser and V. Ozanics.—p. 1063.
Backflow Phenomena in Aqueous Veins of Normal and of Glaucomatous Eyes. K. W. Ascher.—p. 1074.
Macula-Wedge Scotoma a Prognostic Index in Glaucoma. J. N. Evans.—p. 1090.
Epithelial Tumors of Iris. Mary Knight Asbury.—p. 1094.
Trachoma. W. G. Forster and J. R. McGibony.—p. 1107.
Reactivity of Ocular Tissues to Wetting Agents. K. C. Swan.—p. 11
Recession of Trochlea for Reducing Action of Superior Oblique Mus. W. L. Hughes.—p. 1123.
Congenital Retinal Folds: Report of 2 Cases. D. Guerry III.—p. 11
Divergence Excess Considered as Anomaly of Postural Tonus of Muscular Apparatus. A. Posner.—p. 1136.

27:1-44 (Oct.) 1944. Part 2

- Concerning Relations of Developing Optic Nerve to Recessus Optici and Hypophysis in Young Fetuses: Study of 7 Human Fetuses 4 mm to 40 mm. Inclusive. H. C. Haden.—p. 1.

Archives of Internal Medicine, Chicago

74:235-310 (Oct.) 1944

- Effect of Hypothermia on Heart Rate, Arterial Pressure and Electrocardiogram of Rat. J. M. Crismon.—p. 235.
*Renal Amyloidosis. O. Auerbach and M. G. Stemmerman.—p. 24
*Gelatin as a Substitute for Plasma: Observations on Its Administration to Human Beings. S. D. Jacobson and C. J. Smyth.—p. 254.
Principles Underlying Studies of Nutrition Pertaining to Influence of Supplements on Growth, Physical Fitness and Health. H. D. Kru. and others.—p. 258.
Infectious Diseases: Tenth Annual Review of Significant Publication H. A. Reimann.—p. 280.

Renal Amyloidosis.—In their study of 379 cases of renal amyloidosis Auerbach and Stemmerman observed that the condition generally develops as part of a generalized process in which there is also involvement of the spleen, the liver and the adrenals. In the majority of cases the extent of the amyloid involvement of the kidneys lags behind that of the liver and spleen. Most persons in whom renal amyloidosis develops die of the underlying disease, which in most instances is tuberculosis. Thus a large proportion of patients with amyloidosis show at necropsy only a minimal or moderate renal involvement. The amyloid process continues for a long period in relatively few cases and it is in these long-standing processes that renal insufficiency usually develops. These patients often succumb not to the underlying disease but to uremia. During progressive deposition of amyloid the typical clinical picture of nephrosis develops in a number of patients. In the early stages of renal amyloidosis there are often no signs or symptoms which would lead one to diagnose the condition. Since the deposition of amyloid in the liver and spleen is usually more advanced, clinical observation of hepatomegaly or splenomegaly may lead one to suspect generalized amyloidosis. The authors found hepatomegaly and splenomegaly in only one third of their patients and do not consider these signs reliable aids in establishing the diagnosis. In cases of minimal and usually in cases of moderate renal amyloidosis the signs and symptoms of renal involvement first lead to the diagnosis. Observations by the authors substantiate the statement of Altmann, Van Winkle, Maly and Williams that if in the course of tuberculosis both albumin and casts appear in the urine in considerable amounts a diagnosis of renal amyloidosis may be entertained. Diminished urinary concentration is almost always present when albumin and casts appear in the urine. The loss of albumin in the urine causes a decrease in the total amount of protein in the blood, a change observed almost without exception in cases of advanced renal amyloidosis. With this reduction there is a tendency toward inversion of the albumin-globulin ratio. Edema and the retention of waste products of the metabolism usually appear within the final month of life and together constitute an extremely bad prognostic sign. Whether or not the patient succumbs to amyloid uremia depends on the patency of the glomerular capsular space. When this has been obliterated by depositions of amyloid, death from uremia is inevitable.

Gelatin as a Substitute for Plasma.—Jacobson and Smyth administered intravenously a 5 per cent solution of purified bovine osseous gelatin to 45 normal persons and to 50 patients in shock. Gelatin solution increased effectively the plasma

volume for at least twenty-four hours in persons not in shock or suffering from any cardiovascular disease. Approximately 80 per cent of the injected gelatin was recovered from the urine in forty-eight hours. There was no evidence to indicate that gelatin solution administered intravenously was metabolized. The increases in plasma volume which occur after infusions of gelatin solutions compare favorably with those observed following intravenous injections of pectin solution and are greater than those which follow intravenous crystalloid infusions. Clinical experience with the 50 persons who were in shock indicates that gelatin solution effectively increases the plasma volume and thereby corrects the major circulatory defect in this condition. The authors believe that gelatin fulfils many of the essential requirements of a substitute for human plasma and warrants an extensive clinical trial in the treatment of shock.

Bulletin New York Academy of Medicine, New York

20:515-554 (Oct.) 1944

Recent Experiences with Penicillin in Treatment of Surgical Infections. F. L. Meleney.—p. 517.

Physiologically Directed Therapy in Treatment of Intractable Bronchial Asthma. A. L. Barach.—p. 538.

20:555-598 (Nov.) 1944

Practical Management of Hypertension. M. B. Rosenblüth.—p. 557.
Sequelae and Complications of Convulsive Shock Therapy. B. L. Pacella.—p. 575.

*Amicrobic Pyuria. E. N. Cook.—p. 588.

*Biologic Differentiation of Benign and Malignant Growths. H. S. N. Greene.—p. 595.

Amicrobic Pyuria.—Cook stresses that in the presence of an infection of the urinary tract the site of the infection must be established. He and his colleagues have seen a number of women patients who have been taking mandelic acid or one of the sulfonamides to the point of tolerance in an effort to eradicate an infection of the bladder and kidneys which did not exist. These patients have burning and frequent urination and pus in the urine. It often is found that only voided specimens of urine were examined, and when a catheterized specimen is examined it is entirely free of pus or organisms. Local treatment usually relieves the existing urethritis. When females have pyuria or other symptoms of urinary infection a specimen of catheterized urine must be examined and when males have these symptoms the two glass test of urine should be done routinely before treatment is instituted in order to determine whether the infection involves the kidneys, ureters or bladder. Simple Gram's staining of the urinary sediment should be done in every suspected case. Examination of slides after Gram's staining will divide the cases into those with demonstrable organisms and those without demonstrable organisms. Physicians have been taught that sterile or amicrobic pyuria is indicative of a tuberculous infection of the urinary tract. This is the usual cause but it does not account for all such cases. Because of the occasional difficulty in finding the tuberculous organisms in stained slides of urine and the length of time required to carry out the guinea pig test, a tentative diagnosis of tuberculosis is made. Failure to find certain clinical signs of tuberculosis of the urinary tract should tend to exclude this condition even before the laboratory reports are received. Cystoscopic findings in cases in which nontuberculous, sterile pyuria is present are a reduced vesical capacity, extreme irritability and diffuse involvement of the vesical mucosa with redness, edema and at times ulceration. The chemotherapeutic compounds that are so efficacious in combating the ordinary infections of the urinary tract are of little value in the treatment of amicrobic pyuria. Local treatment gives only palliation, but the intravenous administration of arsenical compounds is almost specific. The author makes a plea for the appreciation of the part which foci of infection play in many of these cases. Permanent cure will frequently be impossible unless existing foci are eradicated. The teeth, tonsils, prostate gland and uterine cervix are the most common foci.

Biologic Differentiation of Benign and Malignant Growths.—Greene states that in his laboratory spontaneous cancers of the breast and of the uterus have occurred in the rabbits with the greatest frequency. A characteristic feature of

these cancers is a well defined developmental history. They do not arise as a sudden transition of normal cells but represent the final step in a progressive developmental process during the course of which the primary neoplastic focus passes through successive stages of anaplastic cellular change, local tissue invasion, foreign tissue invasion and eventually metastasis. Transplantation experiments utilizing the anterior chamber of the eye as an inoculation site showed that the tumors could not be transferred to normal animals during the stages of anaplastic cellular change but could be transferred to normal animals during the stage of foreign tissue invasion. In contrast to the failure of transfer to normal animals during stages prior to foreign tissue invasion, it was found that at such stages the developing tumors could be successfully transplanted to animals bearing spontaneous growths. This finding suggested that special factors were present in the spontaneous hosts but absent in normal animals and the nature of the endocrine changes constantly found in tumor bearing animals indicated that one of these factors might be an abnormal secretion of estrone. It was subsequently found that dependent tumors survived and grew in estrogenized animals, whereas early death of the transplants occurred in normal animals. The anterior chamber has also been used for the heterologous transplantation of mouse tumors and it has been found that in this species tumors undergo the same biologic phases of dependence and autonomy observed in the development of rabbit cancer. It has also been possible to transplant human tumors to lower species using this route of inoculation. The author concluded that the rabbit cancers are not simply local tissue diseases but represent local manifestations of a generalized constitutional disorder and that in the rabbit the primary neoplastic focus is not a cancer. Before becoming a cancer it must undergo a process of progressive evolutionary development. Development to cancer will not take place in normal animals but is dependent on a special constitutional status which may be evoked experimentally by the administration of estrogenic substances.

New England Journal of Medicine, Boston

231:477-508 (Oct. 5) 1944

Application of Pulmonary Physiology to Therapeutic Procedures, with Special Reference to Use of Oxygen. C. K. Drinker.—p. 477.

Tropical Diseases of Skin. H. Fox.—p. 482.

Goal of Eye Hygiene Program for School Children. J. J. Regan.—p. 486.

Physiology. H. E. Hoff.—p. 491.

231:509-542 (Oct. 12) 1944

*Treatment of Meningococcic Meningitis with Penicillin. M. Meads, H. Harris, B. Samper and M. Finland.—p. 509.

Are Doctors People? R. I. Lee.—p. 517.

Cardiospasm as a Cause of Pneumonitis. W. Gray and I. R. Jankelson.—p. 522.

Physiology (concluded). H. E. Hoff.—p. 526.

Treatment of Meningococcic Meningitis with Penicillin.—Meads and his associates report 9 cases of meningococcic meningitis, including 5 with meningococcemia, that were treated with the calcium salt of penicillin intrathecally and intramuscularly. All patients were started on both intramuscular and intraspinal penicillin immediately after the diagnosis was made. Initial intraspinal doses consisted of 10,000 to 20,000 units in 10 cc. of sterile isotonic solution of sodium chloride to replace a similar or larger volume of spinal fluid withdrawn. The number of intraspinal injections averaged about six, and the total amount of penicillin given intrathecally varied from 30,000 to 150,000 units, averaging about 75,000 units. Doses of 15,000 units were given intramuscularly every three hours in 7 cases and doses of 10,000 units every three hours in 2 cases. This therapy was continued until there were signs of clinical improvement. The duration of intramuscular therapy was two and a half to six and a half days. The total amount of penicillin given by this route ranged from 190,000 to 1,155,000 units, averaging almost 500,000 units. In 2 cases, because of poor clinical response and persistence of abnormal bacteriologic and spinal fluid chemical findings, penicillin was discontinued and sulfapyrazine was given, first parenterally and then orally in standard doses. In another case, because of persistent positive throat cultures after one week of penicillin therapy, a forty-eight hour course of sulfadiazine was given orally. The clinical and laboratory findings in this series suggest that the sulfonamides are

the drugs of choice rather than penicillin. If penicillin is used, careful observations should be made of the clinical course, the spinal fluid and nasopharyngeal flora and the spinal fluid chemistry. The clinical response to penicillin is slower than that to the sulfonamides, and one may eventually have to resort to the sulfonamides for cure. Calcium penicillin seems to be quite effective against group I meningococcus bacteremia. Strains of group I meningococci vary greatly in their susceptibility to penicillin. Strains from 5 patients in the present series resembled the relatively resistant ones of *Staphylococcus aureus* and *Streptococcus viridans*.

United States Naval Med. Bulletin, Washington, D. C. 43:611-846 (Oct.) 1944

- Planned Convalescence. E. W. Lowman.—p. 611.
Role of Psychiatrist in General Rehabilitation Program. F. J. Braceland.—p. 621.
Program for the Rehabilitation of Psychiatric War Casualties: Role of Convalescent Hospital. J. B. Dynes, F. J. Hamilton and R. A. Cohen.—p. 628.
Physical Therapy in After-Care of Amputations of Lower Extremity. S. Brunnstrom.—p. 634.
Scrub Typhus: Report of Epidemic in Southwest Pacific. J. B. Logue.—p. 645.
*Meningococcal Infections. W. M. Whitaker.—p. 650.
Epidemic Diaphragmatic Pleurodynia: Outbreak. W. S. McDaniel.—p. 664.
*Collapse of Intervertebral Disk Following Spinal Puncture: Report of 2 Cases. F. H. Downing.—p. 666.
Fatigue-Stress Fractures: Diverse Anatomic Location and Similarity to Malignant Lesions. J. Gershon-Cohen and R. E. Doran.—p. 674.
Aerial Evacuation of Thoracic Wounded: Consideration of Effects of Altitude. A. Goldman.—p. 685.
Anesthesia Aboard Hospital Ship in Combat Areas. L. K. Ferguson.—p. 697.
Pathogenic Enteric Bacilli: I. Paracolon, Proteus and Pseudomonas Groups. L. A. Barnes.—p. 707.
Cold Hemagglutinins in Infectious Mononucleosis. C. L. Singarn, J. P. Jones and B. Owrutsky.—p. 717.
Treatment of Marginal Paratuberculosis in Naval Personnel. J. L. Bradley and P. A. Ratcliff.—p. 720.
Modified Apicoectomy Technic: Indications and Application in Field. C. M. Moore.—p. 729.
Low Incidence of Malingering Among Navy Draftees. D. H. Harris.—p. 737.
Yaws Survey on Nanumea Atoll: I. D. LeFevre Jr., D. F. McDermott and R. B. Venner.—p. 739.

Meningococcal Infections.—Whitaker describes the clinical manifestations of meningococcal infections observed in a study of 116 cases at the U. S. Naval Hospital, Farragut, Idaho, during a thirteen month period. He divides infection resulting from the meningococcus into three phases: (1) the nasopharyngeal, (2) the septicemic or invasive, and (3) the meningel. Failure to recognize the signs and symptoms of the second (septicemic or invasive) phase has been a major factor in delayed treatment and the consequent high mortality. Fever, chills, headache, characteristic rash and arthralgia, in the presence of an epidemic, are sufficient to warrant the diagnosis of a meningococcal infection and to require early treatment while awaiting laboratory confirmation. The mortality rate seems to parallel the intensity and severity of the skin lesions. Evidence of adrenal damage with vascular failure must be carefully watched for, particularly in patients with extreme skin manifestations of the purpura fulminans or intense petechial types. Prognosis in such cases, while always grave, is not hopeless if early intensive treatment is instituted. A total mortality rate of 4.3 per cent occurred for all cases, treated or untreated, with a corrected rate of 1.72 per cent for cases treated for at least twenty-four hours. No evidence was obtained in this series of meningococcal infections to warrant further employment of antitoxin. Early diagnosis with prompt institution of chemotherapy, preferably by the parenteral route, maintaining a high concentration of the drug in the blood and spinal fluid, leads to rapid control of the infection and ultimate complete recovery in over 98 per cent of meningococcal infections.

Collapse of Intervertebral Disk Following Spinal Puncture.—Downing reports 2 cases in which collapse of the intervertebral disk followed operations in which a spinal anesthetic was employed. Both had the onset of back symptoms and disability shortly after operation, and in both subsequent x-ray studies showed partial collapse of the intervertebral disk between the third and fourth lumbar vertebrae. In the first

case the onset of early symptoms together with long delayed evidence of intervertebral disk collapse would indicate that the pain was due to extensive disk trauma rather than to the subsequent escape of nuclear substance. The resultant collapse of the disk was purely a later degenerative reaction precipitated by the original trauma; it was also manifested by productive osteoarthritic changes. It is likewise possible that the further productive bone changes were the result of a protective reaction from an altered mechanical condition producing abnormal stress and strain. This theory would also account for the chronicity of the symptoms and the failure to obtain relief by mechanical supportive treatment. In the second case the symptoms appeared later and not until the weight bearing had been reestablished. The collapse occurred in a period known to be not more than sixteen days. This is too short a period to be explained by degenerative changes and can be explained only by a rapid change in the intradisk pressure which would occur with an escape of nuclear material. As it was known in this case the three unsuccessful attempts were made to obtain spinal fluid: the third and fourth lumbar interspace, three or more puncture of the annulus fibrosus in this region were possible. They could have occurred in its weakest portion, lateral to the posterior longitudinal ligament, and the damage produced could have been sufficient to allow the gradual escape of hydrostatic nuclear substance. The acutely flexed position of the spine when the puncture is made increases the danger of injury to the disk by increasing the intradisk pressure and directing the needle toward the intervertebral space. The needle should be angulated cephalad so that in case it is inserted too deeply it will strike the posterior surface of the superior vertebra. The need for the use of a sharp, fine caliber, short bevel needle and extremely careful technic is apparent.

West Virginia Medical Journal, Charleston

40:309-340 (Oct.) 1944

- What is the Matter with Patient Who is Always Tired? W. C. Alvarez.—p. 309.
Skin Closure with Plain 0 Suture (Preliminary Report). A. P. Hudgins.—p. 314.
Role of Exophthalmos in Diagnosis and Treatment of Graves' Disease: Report of Cases. F. H. Adler.—p. 316.

40:341-372 (Nov.) 1944

- *Treatment of Diabetes Mellitus by "Single Injection" Method. F. B. Peck.—p. 341.
Medicine in South Pacific. A. McMahon.—p. 348.
Tropical Disease: Etiology and Epidemiology. E. M. Bingham.—p. 355.

"Single Injection" Method in Diabetes Mellitus.—Peck states that at the Indianapolis City Hospital the principles of diabetic regulation have been altered. Instead of attempting to prescribe the individual's diet to suit the action of standardized insulin preparations, the opposite course was adopted, that of adjusting the insulin preparation to fit the individual circumstances. This is accomplished by prescribing three equal meals, no supplementary feedings, and the same laboratory criteria as previously required to establish control with insulin and protamine zinc insulin when given in separate doses. In order to provide a base line for comparison of methods, each case is first controlled as well as possible with separate doses of insulin and protamine zinc insulin. When this has been accomplished, the total dosage is given before breakfast each morning in the form of a suitable admixture in a single dose. If postprandial levels rise unduly, a greater proportion of insulin is needed in the mixture; if daytime reactions occur, less insulin is prescribed. Just as is the case when giving protamine zinc insulin separately, the dose of this component is governed by the blood sugar level as determined before breakfast. Usually patients who require less than 40 units daily have done well with 3:2 mixtures (3 parts of insulin to 2 parts of protamine zinc insulin); for those who need between 40 and 50 units daily the 2:1 mixture is usually suitable, while the more severe cases needing in excess of 50 to 60 units each day have required 3:1 or even rarely 4:1 combinations. Of more than 150 patients who have been observed under these conditions in the last two years, only 3 have been changed back to the separate injection method. Diabetic control has been at least equal to that accomplished with multiple injections and usually superior to it.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Lancet, London

2:459-490 (Oct. 7) 1944

- *Hazards of Hypertherm Treatment. J. Wallace and S. R. M. Bushby.—p. 459.
*Neurologic Complications of Serum and Vaccine Therapy. R. R. Hughes.—p. 464.
Clothed Hemorrhax. R. W. Lush, J. C. Nicholson, C. R. Stevenson and W. F. Nicholson.—p. 467.
*Sonne Dysentery Treated with Sulfaguanidine. W. H. Osborn and R. N. Jones.—p. 470.
*Sonne Dysentery Carriers Treated with Succinylsulfathiazole. A. E. Brewer.—p. 471.
Bone Marrow Infusions for Infants. G. Behr.—p. 472.

Hazards of Hypertherm Treatment.—Wallace and Bushby investigated changes occurring in patients undergoing hypertherm treatment to ascertain whether chemotherapy increases the risks and to discover prophylactic or therapeutic means of eliminating or minimizing the danger inherent in the treatment. They report clinical observations on 254 cases undergoing hypertherm treatment at 106.6 F. for eight hours. Of these, 37 were the subject of a detailed clinical, hematologic and biochemical investigation. The most constant and prominent features were the development of anoxia and of bilirubinemia progressing to definite clinical jaundice in 37 cases. Hippuric acid tests for liver function showed a considerable reduction in this function. Patients with jaundice should be treated as if they had hepatitis and should be kept warm in bed for at least three days or until the jaundice clears. Continuous oxygen and carbon dioxide therapy lessens, though it does not abolish, the anoxia. It appears to prevent circulatory collapse. Vomiting was less frequent after its introduction. Circulatory collapse is a failure of the vasomotor and respiratory centers and is not due to a reduction in the volume of the circulating blood or to myocardial failure. The use of morphine is contraindicated. Hypertherm treatment causes a transient polymorphonuclear leukocytosis and a transient hemodilution. There is a small transient rise in nonprotein nitrogen and a tendency for plasma chlorides and urinary chlorides to fall. The treatment has considerable dangers. The duration must be decided by the medical officer observing each case, but the following are suggested as indications for terminating treatment immediately: (1) fall of systolic blood pressure below 100 mm. of mercury, (2) disorientation, (3) pulse rate persistently over 160 per minute, (4) respiratory rate persistently over 50 per minute, (5) temperature of 107 F. for a quarter of an hour, (6) restlessness and violence, (7) coma, (8) pallor superimposed on cyanosis, (9) intolerance on the part of the patient, the restlessness of an intolerant patient adding greatly to the risks inherent in the treatment, (10) persistent vomiting. Catarrhal infection and nasal obstruction should be regarded as contraindications to treatment. The patient should be examined preparatory to the hypertherm treatment so as to exclude those with cardiovascular, respiratory, renal or hepatic disease. The treatment should be carefully explained beforehand to prepare the patient for his physical and mental ordeal. Oxygen and carbon dioxide should be given for at least an hour after treatment or until color improves. Premedication with 6 Gm. of sulfathiazole does not increase the hazards of hypertherm treatment.

Neurologic Complications of Serum and Vaccine Therapy.—Hughes reports 3 cases of serum neuritis that were seen at military hospitals in England within a year. The first 2 were of the radicular type. In the third case disseminated sclerosis was at first thought of, because the author was not aware that the neurologic lesion could result from vaccine injection. On reconsideration, however, serum neuritis of the central type seemed a more likely explanation and in view of the time relationship more probably the result of tetanus toxoid rather than of T. A. B. vaccine. On investigating the records of all cases of peripheral neuritis admitted to the hospital during the past two years, 3 further cases of serum neuritis were discovered. Two of these were again of the radicular type. The other case showed wrist drop due to a right musculospinal palsy. This appeared ten days after an intravenous injection of T. A. B. vaccine. The similarity between the radicular, neuritic and poly-

neuritic forms of serum neuritis and the types of "virus" neuritis is striking and suggests that for the time being these two types of neuritis should be regarded as being of the same group. It seems possible that "serum" and "virus" neuritis will prove to have the same cause.

Sonne Dysentery Treated with Sulfaguanidine.—Osborn and Jones review observations on 71 cases of dysentery which recently occurred in a naval officers' training establishment accommodating about 250 people. On the first day of the outbreak there were 9 cases, on the second day 14 more and on the third day 20; in the next two weeks there were 21 and 7 respectively. The diarrhea stools, which contained mucus but no blood, were preceded by two to four hours' fever and malaise. The diarrhea was severe in the early cases, and these required treatment in bed for two days. The symptoms never lasted more than two or three days, but varying intervals elapsed before negative stool cultures were obtained. The diagnosis was made in all cases from stool cultures. Forty-seven of the patients were at first treated with small doses and later with larger doses. These required an average of seven to eight days to become free from infection. Another 16 treated from the onset with the larger doses became free from infection in an average of four days. The authors conclude that sulfaguanidine is a satisfactory drug for treating Sonne dysentery but that it should be used in larger doses than are at present recommended, since smaller doses tend to encourage ambulant cases and possible carriers.

Dysentery Carriers Treated with Succinylsulfathiazole.—In an investigation carried out after an outbreak of Sonne dysentery in an army unit, Brewer found that in 16 of 32 patients the causal organism was still recoverable from the stools one to three weeks after all symptoms had ceased and the patients were well again. This is a potential carrier rate of 50 per cent. Nine of the 16 patients had been treated with sulfaguanidine and the remaining 7 had no treatment other than rest in bed, restricted diet and bismuth and soda and salts. Times taken for clinical recovery in the two groups were the same and gave an average of three days, so that sulfaguanidine does not appear to influence the course of the disease. The 16 patients in whom culture of fecal specimens on desoxycholate citrate agar yielded positive results after they were well again were given 44 Gm. of succinylsulfathiazole over five days. This treatment cleared all but 1 patient, who required two such courses. In vitro experiments showed that succinylsulfathiazole has a bacteriostatic effect on *Bacterium sonnei* directly proportional to the amount of drug present and inversely proportional to the number of bacilli present. Sulfaguanidine in vitro does not have this bacteriostatic effect.

Revista de la Asoc. Méd. Argentina, Buenos Aires

58:547-608 (July 30) 1944. Partial Index

- *Local Sulfonamide Therapy and Repair of Tissues. A. Fernández Saralegui and A. A. Villanueva.—p. 563.

Effects of Local Sulfonamides on Tissues.—Fernández Saralegui and Villanueva observed that sulfonamides applied locally to chronic ulcers and wounds arrest healing, which can be stimulated if the sulfonamide is mixed with allantoin. The authors used a powder consisting of equal parts of sulfanilamide and sulfathiazole and an ointment which contained 2 per cent allantoin, 7 per cent sulfanilamide, 40 per cent cod liver oil and a greaseless base in sufficient quantity to give the ointment the desired consistency. Sulfanilamide when applied locally to wounds and chronic ulcers has a selective inhibitory effect on the various types of bacteria. The effect of the drug depends on the time during which it is maintained in proper concentration during its contact with the tissues. The concentration of the drug in the wound or ulcer depends on the type of sulfonamide used, since the solubility of the drug varies with the various types of the drug. The bacteriostatic effect of sulfanilamide is favorably modified by phagocytosis and by the elimination of inhibitory substances from the wound or ulcer. The allantoin and sulfonamide mixture (or ointment) stimulates phagocytosis, accelerates the elimination of substances which inhibit healing, prevents the harmful effect of sulfanilamide and stimulates cell proliferation and the formation of new tissue.

Book Notices

Principles and Practice of Surgery. By W. Wayne Babcock, M.D., Acting Consultant, Philadelphia General Hospital. With the collaboration of Members of the Faculty of Temple University. Cloth. Price, \$12. Pp. 1,331, with 1,149 illustrations. Philadelphia: Lea & Febiger, 1944.

As the author states in the preface, he made the attempt to cover in one volume not only common but also rare surgical conditions occurring throughout the world. This ambitious undertaking has been accomplished in an admirable manner by the author and his thirty-seven collaborators of the Faculty of Temple University. The second edition of the author's "Text-book of Surgery" has been remodeled by these thirty-seven architects in such a manner that the new, imposing, streamlined structure incorporates latest advances in surgery, including experiences gained in the present war. Shortcomings of this type of textbook, such as overlapping of subjects or contradictory opinions, have been avoided by the fact that the majority of co-authors work together at Temple University. It is amazing how much valuable information has been squeezed into one volume. The style of the book is simple, it is easily readable, the text is compact and to the point, illustrations are numerous and adequate, the color plates are splendid. A cursory perusal revealed a few omissions. For instance, on page 36 the necessity of daily determinations of prothrombin time while using dicumarol has not been mentioned. Pectin deserves a place among drugs used in the treatment of shock (p. 55). Mediastinal emphysema should be added to the list of indications for operations in chest injuries (p. 69). Nylon and tantalum should be included in the list of suture materials. The description of a negative and double positive Trendelenburg test on page 494 will raise in the minds of the students the question "What is a single positive Trendelenburg test?" Such minor omissions do not detract from the value of the book, which is so preeminent in the field that it can be most heartily recommended not only to students but to general surgeons as well.

Bailey's Text-Book of Histology. Revised by Philip E. Smith, Ph.D., Professor of Anatomy, College of Physicians and Surgeons, Columbia University, New York, and Wilfred M. Copenhaver, Ph.D., Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University. With the assistance of Aura E. Severinghaus, Ph.D., Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University, and Charles M. Goss, M.D., Professor of Anatomy, University of Alabama Medical School. Eleventh edition. Cloth. Price, \$6. Pp. 786, with 478 illustrations. Baltimore: William Wood & Company, 1944.

Eleven editions and three reprintings are ample proof of the fact that this book fulfils the requirements of a good textbook. The descriptions are clear and accurate, and enough functional correlation is included to make the structures come to life for the student. Problems and controversial material are presented and discussed in a stimulating manner. The references to the literature at the end of each chapter are well selected. This edition has been improved by the introduction of many new and mostly original illustrations. Sections on the placenta and carotid and aortic bodies have been added. The chapter on the pineal body is rewritten and extended, and several minor changes in the text have brought the material up to date. On the whole the book has retained its previous character and will continue to serve as an excellent textbook for medical students.

Tratado sobre las rickettsias y las fiebres exantemáticas, el tifus altiplánico. Por el Dr. Félix Veintemillas, director del Instituto N. de bacteriología y catadrático de la Facultad de medicina de La Paz. Publicado por el Ministerio de higiene y salubridad ante la recomendación del segundo Congreso médico nacional. Paper. Pp. 479, with illustrations. La Paz: Escuela Tip. Salesiana, 1944.

This is a book giving a complete picture of the diseases due to the rickettsias. It is divided into three chapters. The first treats of the rickettsias in general as to the nomenclature, origin, nature, morphology, staining, resistance, growth, mediums, susceptible animals and the biologic characteristics of the organisms of the various diseases designated rickettsia. The rickettsias are classified with their arthropod vectors. The second chapter gives a lucid, comprehensive study of the clinical aspects of the fiebres exantemáticas, including an interesting history of each disease. The epidemiology, histology, geographic distribution,

treatment, prophylaxis and immunization are reviewed in a complete manner. In the third chapter the author deals in detail with the extremely metamorphic study of his original observations of "tifus altiplanico." (The term "altiplanica" refers to a specific region of southwestern Bolivia encompassing the states of Potosi and Oruro having an elevation of 9,000 to 13,000 feet.) The author first noted the disease as a student and diagnosed it as typhoid, then as paratyphoid. Finally, following his experiences and study in Germany during the first world war he suspected that the disease was in truth epidemic typhus or a typhus-like disease. He returned to La Paz to prove that the disease of his medical school thesis was epidemic typhus. The clinical aspects of "tifus altiplanico" and the diagnosis, pathology and experimentation with the virus in vivo are reviewed in detail. Finally treatment and prophylaxis are detailed.

Gynecology and Gynecologic Nursing. By Norman F. Miller, M.D., Professor of Obstetrics and Gynecology, University of Michigan Medical School, Ann Arbor, and Virginia Bryant, R.N., With a chapter on The Gynecology Operating Room by Molly Kowal, R.N., Operating Room Supervisor, University of Michigan Medical School. Cloth. Price, \$2.75 Pp. 378, with 227 illustrations. Philadelphia & London: W. B. Saunders Company, 1944.

This textbook for nurses is designed to provide a thorough background in gynecology for the undergraduate and graduate student. The material is assembled in a logical manner so that the nurse adds to her fund of information systematically. A complete description of the anatomy of the pelvic organs, their physiologic functions and the common perversions of these functions precedes a discussion of pathologic conditions. The major emphasis is placed on the nature and the course of the disease and little on therapy. A chapter on gynecologic nursing procedures covers minutely the preparation and the armamentarium necessary for all gynecologic operations. The various steps of these operations are listed in detail. Although these descriptions refer to the nursing technic at the University of Michigan Hospital, they are fundamentally sound and represent well accepted procedures in use in most gynecologic services. Minor office and clinic problems are likewise described carefully and in great detail. The text is profusely illustrated by pen and ink drawings skillfully prepared to enhance the pedagogic value of the descriptive material. The artists deserve special commendation for their work. This gynecologic textbook is a distinct addition to nursing books in our special field. It follows the recent trend of sharing our teaching responsibility to nurses between the physician and the nurse. The senior author is a gynecologist and a teacher of note. Physicians and medical students have profited and enjoyed his interesting, lucid lectures and writings for years. This nursing textbook has given him an opportunity to extend the scope of his teaching to nurses.

Klinika malyarii. [By] Prof. L. M. Tarceev. [Clinical Aspects of Malaria.] Paper. Pp. 299, with 37 illustrations. Moskva: Narukomzdrav SSSR, Gosudarstvennoe izdatelstvo meditsinskoy literatury "Medgiz," 1943.

The extensive monograph by Professor Tarceev, chief of the clinical division of the Central Malaria Institute in Moscow, is devoted to a systematic discussion of the pathogenesis, symptomatology, diagnosis and course of malaria. Considerations of the parasite, the vector, the epidemiology and the epidemiologic methods of combating the disease are not included. The monograph is devoted exclusively to the discussion of the purely clinical questions, particularly those pertaining to the involvement of the various organs and the many complications of malaria. Correlation of the symptoms with the pathogenesis, immunity and the host parasite relationship is stressed. The author draws for illustrative cases on the extensive material of the Central Malarial Institute in Moscow. The various chapters deal with the general characteristics of the malarial infection, the basic triad spleen, liver and blood, the lesions of the various systems, special types of the malarial infection, diagnosis and prognosis, and the prophylaxis and treatment of the disease. Bibliographic references are limited to the more important recent contributions in the fields of parasitology, entomology and epidemiology of malaria. The monograph makes interesting reading and will undoubtedly prove of great practical value in the combat waged by the Soviet Union against this important disease.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

SURGICAL REPAIR OF INGUINAL HERNIA

To the Editor:—Has there been any recent advance in the surgical technic of repair of inguinal hernia? N. I. Ardan, M.D., Niagara Falls, N. Y.

ANSWER.—The principles of Bassini and Halsted are still sound. It is generally accepted that the basis of repair is high ligation of the hernial sac in indirect hernia and careful repair of the transversalis fascia in a direct hernia. A number of surgeons have expressed a preference for nonabsorbable sutures, such as silk or cotton. McVay and Anson (McVay, C. B., and Anson, B. J.: A Fundamental Error in Current Methods of Inguinal Herniorrhaphy, *Surg., Gynec. & Obst.* 74:746 [March] 1942) recommended that the inguinal layers be sutured to Cooper's ligament and not to the inguinal ligament (Poupart's ligament in old terminology). They point out that the inguinal ligament is neither the normal insertion of the inguinal layers nor a suitable substitute for such an attachment; on the contrary, the superior pubic or Cooper's ligament, which is the normal insertion, is readily accessible, intrinsically strong and directly fixed to the bone. Harkins and Swenson (Harkins, H. M., and Swenson, S. A., Jr.: A Cooper's Ligament Herniotomy, *S. Clin. North America* 23:1279 [Oct.] 1943) used this technic in the repair of 322 groin hernias, and they feel that their results justify the theoretical advantages of this procedure. The MacArthur, Gallie and LeMesurier use of living fascial strips is not new and cannot be classified as an advance. Bost (Bost, T. C.: A Further Improved Technique for the Cure of Inguinal Hernia, *North Carolina M. J.* 3:109 [March] 1942) first traumatized the tissues to be sutured by cauterization and claims to have obtained in dogs a much firmer union of muscle to fascia suture. A follow-up of 381 operative cases clinically for a year or more revealed only 4 recurrences—a very low incidence indeed. A single report, however, cannot be regarded as definite solution of the problem of cure of inguinal hernia.

SALPINGOSTOMY AND TUBAL IMPLANTATION

To the Editor:—A woman aged 29, at present in good general health, had a pelvic infection seven years ago following an induced abortion. She has not been pregnant since that time but has had a profuse menstrual flow and hot flashes, accompanied by palpitations of the heart. On May 27, 1944 an emergency appendectomy was performed, at which time were discovered many adhesions in the pelvis, a bilateral salpinx and a small simple cyst on the right ovary; the left ovary was adherent to the posterior aspect of the uterus. With some difficulty the tubes were removed, the cyst on the right ovary dissected out, the left ovary freed from its adhesions and the appendix removed. She made an uneventful post-operative recovery and has done well except for an apparent need for estrogenic substance. She wants to have a child. She has heard of an operation whereby a small piece of ovary is inserted into a wedge of uterus with the possibility that an egg cell might escape into the uterine canal, resulting in pregnancy. It seems to me that the chance of a pregnancy resulting is hardly worth the surgical risk. Are there statistics relative to the success of such a procedure, and what is the current opinion as to its value? Can any other procedure be suggested?

David Hoehn, M.D., Palmer, Alaska.

ANSWER.—In an article entitled "Evaluation of Salpingostomy and Tubal Implantation for the Treatment of Sterility" J. P. Greenhill (*Am. J. Obst. & Gynec.* 33:39 [Jan.] 1937) says, concerning ovarian implantation:

"Some gynecologists who are opposed to tubal implantation remove the entire tube with the uterine corner and implant a portion of an ovary on the exposed portion of the uterus. A few gynecologists transplant the ovary into the uterine cavity.

"Von Graff collected 66 cases in which a graft of ovarian tissue was placed on a uterine horn or on a tubal stump. He reported 14 pregnancies (21.2 per cent) following these operations. However, since only 5 of these pregnancies went to term, only 7.6 per cent of the operations, or 1 in 13.2 operations, resulted in a full term baby. Among the remaining 9 gestations there were 6 abortions and 1 ectopic pregnancy. The outcome in 2 cases was unknown. In Von Graff's collected series of 41 cases in which an ovary was transplanted into the uterine cavity, only 3 pregnancies (7.5 per cent) resulted, of which 1 went to term (2.4 per cent) and the other 2 ended in abortion. Reiprich collected 200 ovarian transplants of all types and

reported only 5 pregnancies (2.5 per cent) following these operations. Estes followed up 27 out of 88 patients on whom he had performed his ovarian transplantation operation and found that pregnancy had occurred in 4 of them (15 per cent). In a later article Estes reported that in a series of 50 patients whose case records were complete only 4 became pregnant (8 per cent). Two of these women had abortions and 2 had full term babies.

"Novak states (personal communication) that 4 pregnancies resulted after the six Estes operations he had performed. Because of economic conditions 3 of these women had induced abortions, but the fourth patient had a spontaneous abortion.

"Some of the complications which I have described as having followed plastic operations on the tubes have also occurred after ovarian transplantation. Thus R. E. Watkins performed an ovarian transplantation and subsequently had to do another operation to remove the transplanted ovary, which had grown to be a cystic mass 9 cm. in diameter and which proved to be a chocolate cyst. Wier reported a death following an ovarian transplantation. This woman became pregnant following an ovarian graft, but her uterus ruptured during labor. Autopsy revealed that the rupture had occurred at the site of the ovarian transplantation.

"In a personal communication Mathieu described a case in which he removed a fallopian tube, made an opening in the cornu and sutured an ovary into the uterus at this point. The patient became pregnant. Fearing that a rupture of the uterus might take place, Mathieu performed a cesarean section and found the transplanted ovary in the same position but flattened out like a pancake and about 8 cm. in diameter. He was able to insert five fingers through this thin ovary into the uterine cavity. Hence his fears concerning a rupture of the uterus were well substantiated."

Unfortunately, since this patient does not have even part of one tube, no surgical operation other than ovarian implantation can be done, and this is not worth while in view of the condition of the patient's pelvis.

SALT TOLERANCE TESTS FOR PITUITARY DYSFUNCTION

To the Editor:—Kindly send me the exact technic and the interpretation of the salt tolerance test for glandular dysfunction; in particular, pituitary dysfunction. M.D., New York.

ANSWER.—Salt tolerance tests for pituitary dysfunction are difficult to interpret in precise terms. Cantarow's studies (*Science* 90:375 [Oct. 20] 1939) involved administration of 10 Gm. of sodium chloride (in capsules) with the morning meal and again with the evening meal for a period of two days. The diet contained approximately 1.6 Gm. of sodium chloride and 4.0 Gm. of potassium; intake of fluid was fixed at 20 cc. per kilogram of body weight daily. On the third day the bladder was emptied at 8 a. m. and urine was collected for the subsequent period of four hours. During this time 5 cc. of fluid per kilogram of body weight was given before 11 a. m. The concentrations of chloride ion (not NaCl) in the four hour specimens of urine were, in 3 subjects with Cushing's syndrome and 1 with hirsutism, 0.193, 0.243, 0.357 and 0.179 per cent chloride respectively and the volumes were 475, 450, 500 and 535 cc. In 12 other subjects who had miscellaneous disorders, with no evidence of endocrine dysfunction, these concentrations of chloride ranged from 0.462 to 1.265 per cent (mean 0.642) and the urine volumes from 680 to 1,170 cc. The author suggested that "this test may prove to be of value in detecting states of hypercortico-adrenalism."

Goldzieher (*Clinics* 1:1069 [Feb.] 1943) described a somewhat simpler procedure. Intake of food and water is kept constant for two days and, on the morning of the second day, 10 Gm. of sodium chloride and 250 cc. of water are given in addition. Urine is collected for each of the twenty-four hour periods, and the quantity of sodium chloride in each specimen is estimated. This author stated that retention of part or all of the test dose of salt, along with water, frequently is observed in association with menstrual disorders, obesity and hirsutism and in subjects with signs of hypopituitarism such as low basal metabolic rate, low specific dynamic action of proteins, relative lymphocytosis, low fasting blood sugar and increased uric acid.

Stephens (*Am. J. M. Sc.* 199:67 [Jan.] 1940) has applied the salt depletion test of Cutler, Power and Wilder (*THE JOURNAL*, July 9, 1938, p. 117) for adrenal cortex insufficiency to subjects with hypopituitarism. In this procedure the subject is given for two days a diet containing about 1.5 Gm. of sodium chloride and 4.0 Gm. of potassium daily. On the first day water as desired is allowed and additional potassium in the form of 42 mg. of potassium citrate per pound of body weight is given in the afternoon. On the second day the dose of potassium citrate is repeated in the morning and intake of fluid is adjusted to 40 cc.

per kilogram for the day. On the morning of the third day breakfast is omitted, the bladder is emptied at 8 a. m. and thereafter all urine voided up to 12 noon is saved. In Addison's disease the concentration of chloride in this four hour specimen was found to range from 382 to 593 mg. per hundred cubic centimeters (as NaCl), mean, 489, while Stephens found that in 6 of 7 cases of clinical hypopituitarism the concentration of chloride in the four hour specimen ranged from 427 to 690 mg. of sodium chloride per hundred cubic centimeters. In 4 of these 6 patients symptoms suggesting those of Addisonian crisis developed. Further reference to the use of the salt depletion procedure in the study of hypopituitary conditions was made by Stephens (*J. Clin. Endocrinol.* 1:109 [Feb.] 1941) and by Wohl and Larson (*M. Clin. North America* 26:1657 [Nov.] 1942). Neither the salt tolerance nor the salt depletion test should be applied in the presence of frank renal disease.

POSSIBLE TREATMENT RESISTANT SYPHILIS

To the Editor:—A man aged 27 came into my office recently and gave me the following history: He developed a lesion on his penis on March 1, 1943, which was diagnosed as a primary lesion by dark field examination. He began taking treatments for syphilis at once. He took arsenic injections in the vein once a week for three months. At this time he developed a rash which was thought to be due to the injections. The injections were stopped and treatment was given by mouth for about two weeks. He was also given a bismuth compound intramuscularly once a week along with the oral medications. However, the rash persisted and was diagnosed as psoriasis. On or about June 1, 1943 he went to another doctor. He continued treatment for another three months. He took an arsenic injection in the arm and a bismuth injection in the hip once a week. On Sept. 10, 1943 he was referred to a specialist, who also diagnosed the case as syphilis. He took the same treatment as he had been taking before for another three months. The rash, however, failed to clear up. In December 1943 he was referred to another specialist. A biopsy of the skin lesions was taken and diagnosed as psoriasiform syphilis. The laboratory reports on blood tests continued to be positive, and so stronger treatment was advised. He then took three injections a week, two arsenic and one bismuth for a month and then two bismuth and one arsenic for six months. Throughout this period of treatment a Wassermann test was performed every three months and never once showed negative. He came to me after having discontinued treatment for two months. Three tests were performed, and all three were negative. A provocative Wassermann was run, and the report of this was negative. One week later four Wassermann tests were done on consecutive days and all were positive. Would you consider this patient as Wassermann fast? Has he had adequate treatment or would further treatment be advised? He has not had a colloidal gold test. Do you think this should be done? He has no symptoms of cerebrospinal syphilis and his reflexes are normal.

M.D., Texas.

ANSWER.—The history of this patient is so inadequate that it is difficult to draw any conclusions. It is quite possible that the patient had a psoriasiform resistant type of syphilis. How much treatment he has had, however, is difficult to make out from the description, and apparently the patient has never had a spinal fluid examination or a general physical examination. A serologic test alone is not enough to allow definite conclusions. As a rule, when a patient is receiving treatment with arsenicals and bismuth compounds it is generally felt that he may be considered cured if he has been on continuous alternating courses of treatment with arsenicals and bismuth for a period of one year after the serologic reaction has become negative and provided physical examination and fluoroscopic examination of the cardiovascular system and lumbar puncture are entirely negative.

LARVA MIGRANS

To the Editor:—What is the latest treatment for larva migrans (creeping eruption)? We see many severe cases at this base and find the usual remedies, such as ethyl chloride sprays, to be only moderately satisfactory. Are there any drugs that may be given by injection which will eradicate this condition?

Lieutenant (MC), U.S.N.R.

ANSWER.—In a single case, an apparent cure of creeping eruption was obtained by injections of sodium antimony bisectatechol (fuadin). A 6.3 per cent solution was used, of which 2 cc. was injected intramuscularly once daily for five days. After a rest period of one week the series of injections was once repeated as given before (Smith, D. C.: Treatment of Creeping Eruption with Sodium Antimony Bisectatechol (Fuadin) (*THE JOURNAL*, Nov. 13, 1943, p. 694). Others reported the effects of injections of fuadin on creeping eruption as a failure to cure in 1 case (Blank, Henry, *ibid.*, Dec. 11, 1943, p. 989), a successful cure in a single case (Rubin, S. S., *ibid.*, March 4, 1944, p. 668) and successful cures in 6 cases (Wilson, J. F.: *J. Florida M. A.* 30:425 [April] 1944).

An application which one observer has found useful in allaying the pruritus attending the disease consists of boric acid 4.5 parts, thymol 0.1, methyl salicylate 0.2, oil of peppermint 0.1, oil of camphor 2, oil of eucalyptus 2, kaolin 53.5 and glycerin 37.6.

CHRONIC NONCALCULOUS CHOLECYSTITIS

To the Editor:—In the therapy of chronic infectious diseases of the gallbladder, has any one investigated the efficacy of the dosage of desoxycholic acid (1½ grain tablet) and the dehydrocholic acid (3¾ grain tablet) on the function of the gallbladder? In other words, will 3¾ grains or 7½ grains of Retachol after one meal increase production of bile 144 per cent? How much fat will 1½ grains of desoxycholic acid emulsify? What would be rational therapy in hypofunctioning cholecystic disease?

Clifford W. Atherton, M.D., Peoria, Ill.

ANSWER.—The question implies the existence of abdominal distress secondary to chronic noncalculous cholecystitis or hypofunction of the gallbladder. Both of these hypotheses are probably incorrect. Cholelithiasis and acute cholecystitis are, of course, definite pathologic and clinical entities. Chronic cholecystitis manifested on pathologic examination by round cell infiltration of the gallbladder wall is often found in association with cholelithiasis. The symptoms attributed to such chronic cholecystitis may be found in gallbladders showing the same signs of inflammation without stones but are also present frequently in cases in which the gallbladder is normal. In the noncalculous gallbladder there is no correlation between the pathologic findings at operation and the symptoms, nor is relief of these symptoms consistently observed following cholecystectomy. Furthermore, the symptoms are usually relieved when treated without reference to the gallbladder. These observations support the view that the symptoms are not due to local organic disease but are part of disturbed function not confined to the biliary tract but present in the alimentary tract as a whole.

Treatment is satisfactorily accomplished by means of a non-irritating diet, antispasmodics, sedatives and supportive psychotherapy. Bile salts are contraindicated because their laxative and irritating effect only aggravates the altered function of the alimentary tract already present. This concept of so-called gallbladder dyspepsia should not be confused with cholelithiasis producing biliary colic and treated only by cholecystectomy. The two conditions may be superimposed, but no definite evidence of their relation to each other has been irrefutably established.

Reference:

Palmer, Walter L.: Functional Disturbances of the Alimentary Tract. *M. Clin. North America* 28:418 (March) 1944.

LOSS OF LIBIDO AFTER UNILATERAL ORCHIECTOMY

To the Editor:—What is the possibility of loss of libido occurring in a young man following orchietomy and irradiation for teratoma? What therapy could be instituted if loss of libido occurred?

M.D., New Hampshire.

ANSWER.—Clinical experience shows that most men who have had a unilateral orchietomy followed by irradiation for teratoma of the testis do not have loss of libido. However, sterility may occur and a temporary complete or partial loss of erections may develop. If there has been loss of libido without evidence of metastasis, a blood count should be made, and if anemia is present this might be the cause. There is no specific treatment for loss of libido. It is doubtful that male sex hormone should be used or would be of any benefit to such a patient.

ABSORPTION OF YELLOW MERCURIC OXIDE FROM MUCOUS MEMBRANES

To the Editor:—What, if any, untoward effect could be expected from the continued use over a long period of time of 1 per cent yellow mercuric oxide on the mucous membrane of the nasal passages where, say, 3 drams was used over a period of a year. To me this seems a small amount of mercury, but I have been asked this question.

B. Wright Shelton, M.D., Miami, Okla.

ANSWER.—There would not be the least untoward effect from the use of a 1 per cent yellow mercuric oxide on the mucous membrane of the nasal passages where 3 drams (11.5 Gm.) was used over a period of a year. There would be little or no absorption from that amount.

HAIR DYES

To the Editor:—I have read in your column various comments concerning hair dyes and have been interested especially in the advice against their use. I am aware that allergy is one of the objections, but I should like to know whether there is any reason to believe that prolonged use will eventually destroy the hair. Would there be any difference between dyeing the whole head and touching up parts of the hair?

M.D., New York.

ANSWER.—There is no evidence that prolonged use of dyes will eventually destroy hair. As far as destroying hair is concerned there should be no difference between dyeing the whole head and touching up part of the scalp.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 127, No. 3

CHICAGO, ILLINOIS
COPYRIGHT, 1945, BY AMERICAN MEDICAL ASSOCIATION

JANUARY 20, 1945

THE TREATMENT OF SUBACUTE BACTERIAL ENDOCARDITIS WITH PENICILLIN

RESULTS IN TWENTY CASES

MARTIN HENRY DAWSON, M.D.

AND

THOMAS H. HUNTER, M.D.

NEW YORK

The present report deals with the use of penicillin in the treatment of 20 cases of subacute bacterial endocarditis. The cases are divided chronologically into 2 groups: (1) a preliminary group of 5 cases treated in the latter part of 1942 and in 1943 and (2) a group of 15 cases treated between January and September 1944. In all instances the infecting organism was a streptococcus of either the viridans or indifferent variety.

PART I: CASES TREATED IN 1942 AND 1943

Cases selected for preliminary clinical trial showed the following characteristics: (a) The infection was of relatively short duration, (b) the patients' cardiac status and general condition were comparatively good and (c) the infecting organism was sensitive to penicillin in vitro. All 5 cases represented classic examples of the disease, and the diagnosis was established by several positive blood cultures on each patient. The underlying cardiac disease was rheumatic in all instances. In this preliminary group the therapeutic program was seriously handicapped by the limited amount of penicillin available. At no time was there assurance that continued supplies would be forthcoming, and from time to time it became necessary to alter the dosage schedules according to the amount of drug on hand or even to discontinue therapy entirely until further supplies were received. A preliminary report on these cases has already been presented.¹

Brief synopses of the 5 cases follow:

CASE 1.—H. H., a woman aged 27, known to have had "endocarditis" at the age of 10, was admitted to the Presbyterian Hospital on Oct. 17, 1942, with a history of weakness, loss of weight, palpitation and low grade temperature of two months' duration. Three months previously some teeth had been extracted, and one month later the tips of several fingers became painful. Examination showed several petechiae in the mouth, a moderately enlarged heart with aortic and mitral systolic and

diastolic murmurs, and a palpable spleen. Three blood cultures were positive for *Streptococcus viridans* with 60 to 80 colonies per cubic centimeter. Serologically the organism was a member of group F (Lancefield) and in vitro was one half as sensitive to penicillin as the standard strain of hemolytic streptococcus.²

Penicillin, 10,000 units every three hours intravenously, was started on October 23 and continued for six days. During this time the blood culture became sterile but the temperature remained elevated, and on November 3 the patient passed an embolus to the right femoral artery. Penicillin in the same dosage was resumed on November 5 and continued for five days. Blood cultures on November 10 and November 14 were positive. Penicillin was again started on November 17 and continued for a period of six days. Following this third course, blood cultures became negative but, because of the persistence of a low grade fever, therapy was resumed as a precautionary measure. From December 7 to December 12, 5,000 units was administered every three hours intravenously. During this time the temperature rose slightly and petechiae appeared on the finger tips. In spite of these signs, blood cultures were sterile and continued to remain so. The total amount of penicillin administered was 1,420,000 units.

Although the bacteremia appeared to have been satisfactorily controlled, the patient developed a number of serious complications during the ensuing weeks. On December 23 signs of an inflammatory pelvic mass appeared and she was placed on sulfadiazine. The response was apparently satisfactory and she was allowed to go home. On Feb. 5, 1943 she was readmitted because of recurrence of the inflammatory mass, and exploratory celiotomy was performed. At operation an infected ovarian cyst was found, and cultures revealed *Str. viridans*, group F, apparently the same organism which had been present in the blood stream. Since pelvic examination at the time of the first admission had revealed no abnormality, it was assumed that the infection resulted from a septic embolus. The patient's general condition did not permit extensive surgery, and hence the cyst was marsupialized. While convalescing from the operation, she developed an acute iridocyclitis and endophthalmitis which ultimately resulted in complete loss of vision in the left eye. Because of the development of draining sinuses and recurring abscesses of the abdominal wall, the subsequent course was protracted. Throughout this period, however, nineteen blood cultures were taken and all were sterile. Finally on April 6, 1944 she was readmitted for radical pelvic surgery. During this admission penicillin was administered prophylactically. Convalescence was uneventful and on April 30 she was discharged. Since then her course has been eminently satisfactory; she has gained 25 pounds (11.4 Kg.), is strong and healthy and leads a normal, active life. Blood cultures have consistently remained sterile.

CASE 2.—H. L., a woman aged 25, known to have had rheumatic fever in childhood, with subsequent rheumatic heart disease, was admitted Feb. 12, 1943 with a ten weeks history of fever and malaise. Examination revealed mitral stenosis, petechiae, clubbed fingers and a palpable spleen. Blood cultures were positive for *Str. viridans*, 68 colonies per cubic centimeter. The infecting strain belonged serologically to group H and was

Owing to lack of space, this article has been abbreviated for publication in THE JOURNAL. The complete article appears in the authors' reprints.

From the Edward Daniels Faulkner Arthritis Clinic of the Presbyterian Hospital and the Department of Medicine, Columbia University College of Physicians and Surgeons.

The penicillin was provided by the Office of Scientific Research and Development from supplies assigned by the Committee on Medical Research for clinical investigations recommended by the Committee on Chemotherapeutics and Other Agents of the National Research Council.

1. Dawson, M. H., and Hobby, G. L.: The Clinical Use of Penicillin; Observations in 100 Cases, J. A. M. A. 124: 611 (March 4) 1944.

2. Dawson, M. H.; Hobby, G. L., and Lipman, M. O.: Penicillin Sensitivity of Strains of Nonhemolytic Streptococci Isolated from Cases of Subacute Bacterial Endocarditis, Proc. Soc. Exper. Biol. & Med. 56: 101 (June) 1944.

from one half to one fourth as sensitive to penicillin as the standard strain of hemolytic streptococcus.

On February 17 penicillin was started, 10,000 units every three hours intramuscularly for two days and then 5,000 units every three hours for four days. Although the temperature became normal within twenty-four hours and remained so on succeeding days, blood culture on February 23 showed 6 colonies per cubic centimeter. On February 26 penicillin was resumed, 5,000 units every three hours intramuscularly, and was continued for five days. The temperature again became normal, but blood culture on March 4 showed 24 colonies per cubic centimeter. On March 8 penicillin was started again, 10,000 units every three hours intramuscularly, and was continued for six days. Once more the clinical response was favorable, but blood cultures continued to be positive. After a total of 975,000 units had been given, penicillin therapy was discontinued because of our inability to obtain a further supply of the drug. She was then placed on sulfadiazine, which appeared to keep the infection in check, although blood cultures continued positive. She was discharged after six and one-half weeks' hospitalization and followed in the outpatient department for the next eleven months. The subsequent course of events is described in the second part of this communication.

CASE 3.—F. R., a woman aged 40, first seen on April 1, 1943, gave a classic history of subacute bacterial endocarditis of three months' duration. Examination showed the presence of rheumatic heart disease. Numerous embolic phenomena had occurred, and blood cultures were repeatedly positive for *Str. viridans*, 60 colonies per cubic centimeter. The infecting organism belonged serologically to group F and was from one half to one fourth as sensitive to penicillin as the standard strain of hemolytic streptococcus. The patient had previously been treated with massive doses of sulfadiazine without appreciable effect.

After the administration of 10,000 units of penicillin every three hours intramuscularly for five days, the temperature returned to normal and blood culture was sterile. Forty-eight hours later, however, there was a recrudescence of fever, and blood culture was again positive. The same regimen was followed for a second five day period and a like result was obtained. Forty-eight hours after therapy was discontinued blood culture revealed 4 colonies per cubic centimeter. Treatment was therefore resumed for a third five day period, and, in an attempt to terminate the infection, the dosage was increased to 20,000 units every three hours intramuscularly for an additional three days. A sterile blood culture was again obtained, and the patient's condition showed a remarkable improvement. Within a few days, however, cultures again became positive, and it appeared probable that the infection could not be terminated with the amount of drug then available. Up to this time a total of 1,600,000 units had been administered. During the succeeding five months six further courses of penicillin were given, but, since there was no assurance at any time that further supplies would become available, treatment was not continued for longer than five days in any one course. On each occasion the temperature promptly returned to normal and continued so for periods varying from one to three weeks. The patient remained in excellent general health, but blood cultures taken during the febrile periods were uniformly positive. It was a matter of great interest that throughout the entire illness the organism remained fully as sensitive to penicillin *in vitro* as it had been originally. Although the infection persisted after a total of 6,700,000 units had been given intermittently over a period of six months, the response was sufficiently striking to warrant the hope that a favorable result might be obtained if a supply of penicillin was available for prolonged, intensive therapy.

Follow-up note: Three months later the patient received intensive penicillin and heparin therapy under the direction of Dr. Leo Loewe of the Jewish Hospital of Brooklyn. He reports that she is now living a normal, active life and is completely well nine months after discontinuance of all treatment.³

CASE 4.—M. L., a woman aged 23 with a history of polyarthritis at the age of 8 followed by rheumatic mitral disease, was admitted on March 30, 1943 with fever, malaise and muscle aches of two weeks' duration. Four blood cultures were positive for *Str. viridans*. The organism could not be classified serologically and was fully as sensitive to penicillin as the standard strain of hemolytic streptococcus. On the eighth hospital day the patient developed a severe pain in the left upper quadrant which was interpreted as a splenic infarct. Penicillin therapy, 10,000 units every three hours intramuscularly, was instituted and continued for eight days. The temperature gradually returned to normal, and blood culture became sterile. On the eighth day she passed an embolus to the left leg in either the lower femoral or popliteal artery. Penicillin dosage was increased to 20,000 units every three hours intramuscularly for two days, and thereafter all therapy was discontinued. Total penicillin administered was 830,000 units. The subsequent course was uneventful. Blood cultures were uniformly sterile, and the erythrocyte sedimentation rate gradually fell from 121 to 35 mm. in one hour. On June 3 she was discharged to a convalescent home, the only complaints being occasional sticking sensation in the splenic region and some pain in the left foot after walking. Since June 1943 the patient has been seen on frequent occasions. Innumerable blood cultures have been sterile. She looks the picture of health and lives a normal, active life.

CASE 5.—H. E., a woman aged 23, with aortic and mitral rheumatic heart disease, was first seen on April 14, 1943. Fever had been present for two months, several petechiae were noted, and the spleen was palpable. Numerous blood cultures were positive for *Str. viridans*, approximately 40 colonies per cubic centimeter. The infecting organism could not be classified serologically and was one fourth as sensitive to penicillin as the standard strain of hemolytic streptococcus. Penicillin was started, 10,000 units every three hours intramuscularly, and continued for eight days. The temperature gradually fell, and blood cultures became sterile. Immediately on discontinuance of therapy, however, there was a recrudescence of fever, and blood cultures again became positive. After an interval of three days, penicillin was resumed and continued for a second period of seven days. Blood culture again became sterile, and the temperature remained normal for the following three weeks. During this period, however, blood cultures again became positive and on May 9 penicillin was resumed. On this occasion she was given 20,000 units every three hours intramuscularly for five days. Although the patient continued in excellent clinical condition, a positive culture was again obtained at the end of this time. In the succeeding two months she was given six further short courses of penicillin, and on each occasion an essentially similar result was obtained. At no time, however, did the blood culture remain sterile for longer than a week. Throughout the entire period great difficulty was experienced in obtaining further supplies of penicillin, and it was never possible to arrange for a program of sustained therapy. On July 24 penicillin treatment was discontinued after a total of 7,960,000 units had been administered. On August 13 she was placed on sulfamerazine. The response was not favorable, and during the succeeding three weeks a low grade fever continued. Blood cultures remained positive. On September 4 a terminal episode occurred which was interpreted as a cerebral embolus.

The autopsy findings were of considerable interest, and the salient features of the pathologist's report are here presented:

"The lesions in the heart were much less extensive than is usually the case in subacute bacterial endocarditis. . . . In general, except for evidence of slight activity, the lesions were old and healed. . . . Careful microscopic examination of a large number of sections of tissue from the heart, all of them stained by the Gram-Weigert method, failed to disclose any detectable micro-organisms. . . . In view of the histologic findings in the heart I feel quite certain that the terminal bacteremia was not the result of the spread of micro-organisms from the heart itself, for the lesions were minimal and bacteria apparently absent. . . . In my opinion the probable source

3. This follow-up report is included by permission of Dr. Loewe.

of the terminal bacteremia was in the brain. . . . Unfortunately, however, the brain was not examined at autopsy and therefore one can only speculate about the cerebral lesions."⁴

SUMMARY OF RESULTS IN PRELIMINARY GROUP

The results obtained in the treatment of this preliminary series of 5 cases may be summarized as follows: In 2 cases the outcome was apparently successful; after periods of twenty-two and eighteen months respectively the patients are in excellent health and leading normal, active, lives. In the 3 remaining cases the response was satisfactory as long as penicillin was administered in the manner described, but the infection recurred when therapy was discontinued. Two of these patients were maintained in excellent general condition for many months and ultimately received intensive penicillin therapy combined with heparin, with completely satisfactory results. The third patient succumbed to a cerebral accident six weeks after cessation of penicillin. Postmortem examination of the heart in this case revealed substantial healing of the endocardium with only slight evidence of residual infection.

In view of the encouraging results in this preliminary series, it was hoped that the clinical trials might be continued in selected cases. In the meantime, much valuable experience has been obtained in the administration of penicillin in a variety of other infections,¹ and it was realized that the methods employed in the foregoing group of cases left much to be desired. However, further supplies of the drug could not be obtained for cases of this disease and the study was therefore temporarily abandoned. In January 1944 limited amounts of penicillin again became available for the treatment of cases of bacterial endocarditis and since then it has been possible to treat 23 additional patients. The second part of this report deals with the results obtained in the treatment of the first 15 of these.

PART II: CASES TREATED IN 1944

Just at the time when it became possible to resume the clinical trials, we learned of the work of Loewe and his associates⁵ at the Jewish Hospital in Brooklyn. These workers reported the apparently successful treatment of 7 consecutive cases of subacute bacterial endocarditis by the combined use of penicillin and heparin. In their series penicillin was administered as a continuous intravenous drip and heparin was given subcutaneously in a special menstruum. Apart from any possible role which heparinization of the blood might play in controlling the infection, this type of anticoagulant therapy appeared to offer the following advantages: (a) The method of subcutaneous administration of heparin was apparently safe and practical, (b) the procedure might be of value in the therapy of cases in which major embolic complications developed, and (c) by preventing clotting of the blood in the veins used for continuous infusion the procedure would remove one of the major difficulties accompanying the technic of prolonged intravenous therapy. Accordingly, heparin was employed in all the cases treated between January and September 1944.⁶ In several instances, however, the amount of heparin used is comparatively small. In some cases penicillin was administered by continuous

intravenous drip and in other cases by intramuscular injection at frequent intervals. Recently a continuous intramuscular drip has been employed with apparently satisfactory results.⁷

Synopses of the 15 cases, together with a description of the additional treatment given in 1 of the cases already reported in the preliminary series, follow:

CASE 7.—R. J., a Negro girl aged 17 with a history of rheumatic fever at the age of 6 and known rheumatic heart disease, was admitted on Jan. 5, 1944 with symptoms of malaise, fever, night sweats and joint pains of one month's duration. Examination revealed conjunctival petechiae, an enlarged heart with mitral stenosis, a palpable spleen and temperature of 103 F. Four blood cultures were positive for *Str. viridans* with 78 to 137 colonies per cubic centimeter. The organism was one half as sensitive to penicillin as the standard strain of hemolytic streptococcus. On January 13 penicillin was started, 20,000 units every four hours intramuscularly. On the ninth day the dose was increased to 20,000 units every three hours and therapy was continued for five more days, making a total of 1,900,000 units. The temperature became normal within forty-eight hours after the institution of treatment but rose again to 101 F. shortly thereafter. This rise was accompanied by joint pains, elevation of the erythrocyte sedimentation rate from 25 to 94 mm. in one hour, and electrocardiographic signs of rheumatic activity. On the administration of salicylates the temperature promptly returned to normal and the joint pains disappeared.

Heparin was administered subcutaneously as follows: January 13, 200 mg.; January 17, 300 mg.; January 22, 200 mg., and January 26, 200 mg. On January 18 the coagulation time rose to one hundred and fourteen minutes and remained between twenty and sixty minutes for several days but rose again to one hundred and fifteen minutes on January 27. On this day the patient complained of "mistiness of vision," and examination revealed bilateral preretinal hemorrhages in the macular region. She was given a blood transfusion of 300 cc.; and the coagulation time promptly returned to ten minutes. The hemorrhages resolved rapidly, and after two weeks her vision again became normal.

The subsequent course was uneventful. On February 10 there were signs suggesting a splenic infarct but no rise in temperature or erythrocyte sedimentation rate occurred, and blood cultures in succeeding weeks were sterile. The patient remained in the hospital until March 27, progressively becoming more active. After two months in a convalescent home she returned to work. Since March, blood cultures have remained consistently sterile and the erythrocyte sedimentation rate has been normal. She has gained 30 pounds (13.6 Kg.), lives an active, normal life and enjoys excellent health.

CASE 2.—H. L. (additional report). Following discharge on March 28, 1943 the patient was maintained on sulfadiazine, 4 Gm. a day, and, although blood cultures continued to be positive, her general condition remained good until January 1944. Thereafter the situation deteriorated materially, with an increase in all symptoms as well as the development of a mycotic aneurysm of the right radial artery. On readmission, March 14, 1944, she was acutely ill and blood culture revealed *Str. viridans*, 102 colonies per cubic centimeter. Penicillin was started on March 18 by continuous intravenous drip. Because of technical difficulties with the infusion the patient received only about 100,000 units every day, but the clinical response was very satisfactory. After twelve days intramuscular injections were employed, and she was given 25,000 units every three hours for eleven days, the total amount administered being 3,542,000 units. Heparin was not given because the clotting time was found to be thirty minutes and the prothrombin time 27.7 seconds, possibly as the result of salicylate therapy. On April 6 a surgical consultant advised ligation of the aneurysm of the radial artery to prevent possible rupture. Following diodrast injection for arteriography, it was found that the

4. Dr. L. W. Gorham, physician in chief of the Albany Hospital, cooperated in the management of this case, and Dr. A. W. Wright, pathologist of the Albany Hospital, made the pathologic report available.

5. Loewe, L.; Rosenblatt, P.; Greene, H. J., and Russell, M. Combined Penicillin and Heparin Therapy of Subacute Bacterial Endocarditis. *J. A. M. A.* 124:144 (Jan. 15) 1944.

6. Dr. Loewe and his associates provided the heparin used in the present study and cooperated in the management of this type of anticoagulant therapy.

7. Harris, F. L.: Continuous Intramuscular Infusion of Penicillin. *J. A. M. A.* 126:232 (Sept. 23) 1944.

brachial artery had become thrombosed proximal to its bifurcation, and the aneurysm ceased to pulsate. She was given 100 mg. of heparin subcutaneously to prevent further thrombosis in the collaterals. Circulation was gradually reestablished in the brachial artery, and all trace of the aneurysm ultimately disappeared. Following cessation of penicillin on April 10 her course continued to be afebrile; blood cultures remained sterile, and she was discharged on May 2. Since then she has been seen on frequent occasions. She has regained her original weight, is doing her own housework and states that she feels as though she never had been ill. Frequent blood cultures have been sterile.

CASE 12.—N. W., a boy aged 13 years with a history of rheumatic fever at the age of 4 and known rheumatic heart disease since 1935, developed fever and malaise in December 1943. Blood culture in January 1944 at another hospital yielded *Str. viridans*, and on February 2 sulfadiazine was started, 1 Gm. every three hours. On the following day there was a complete hemiplegia. On February 15 he had severe pain in the right flank, which was interpreted as a renal embolus. On March 6 he was admitted to the Babies Hospital. The boy was pale, feverish and wasted, chronically and severely ill, with weakness of the right facial muscles and spastic paralysis of the right side of the body. The skin over the coccyx was red and atrophic. The heart showed aortic and mitral disease. Five blood cultures were positive for *Str. viridans*, which was as sensitive to penicillin as the standard strain. Sulfadiazine, 4 Gm. a day, was given from March 9 to April 10 without significant effect. Although the prognosis was considered hopeless, penicillin was started on April 13, 120,000 units every day by intravenous drip. A single injection of 100 mg. of heparin was given subcutaneously on April 13 and the clotting time remained above thirty-five minutes for eight days. During the first five days of penicillin therapy the response appeared to be favorable. His temperature fell to levels around 100 F. but rose to 104 F. on April 18 and remained between 103 and 105 F. for the next week. On April 20 he vomited some clotted blood, and thereafter heparin was discontinued. On three occasions severe thrombophlebitis developed at the sites of the intravenous needle, but the muscles were so wasted and atrophic that intramuscular injections seemed impossible. Because of failure to improve and the generally hopeless outlook (hemiplegia and extensive decubitus), therapy was stopped on the twelfth day after a total of 1,410,000 units had been administered. Six days after cessation of therapy the temperature became normal and remained so. Blood cultures were sterile, the decubitus gradually healed and there was some improvement in the hemiplegia. He remained in the hospital until September 16, gradually gaining weight and strength. From July 25 to August 2 he was treated with sulfadiazine for acute tonsillitis and made an uneventful recovery. One blood culture on August 21 showed a few colonies of streptococci in one flask, but five subsequent cultures were negative. When last seen in October he had gained 22 pounds (10 Kg.) and there was no clinical evidence of infection. The function of the right arm and leg showed continued improvement, and blood cultures were sterile.

CASE 14.—C. A., a man aged 31, was admitted on April 19, 1944 with a three months history of fever, malaise, weight loss, generalized aches and pains and tender finger tips. The past history was exceedingly complicated and included chorea at the age of 8 and the development of a parkinsonian syndrome following encephalitis at the age of 13. Three and a half years previously he had been admitted to the Presbyterian Hospital and at that time was found to have classic subacute bacterial endocarditis. *Str. viridans* was obtained in seven blood cultures. From Oct. 22, 1940 to Dec. 20, 1940 he was given 6 Gm. of sulfapyridine daily. The clinical response was very satisfactory; the temperature gradually returned to normal, and blood cultures became sterile. Following discharge on December 20 he was maintained on sulfapyridine, 6 Gm. a day, until March 4, 1941. Chemotherapy was then discontinued, and in the succeeding three years there was no evidence of a return of the infection.

As a matter of historical interest it may be noted that on Oct. 16 and 17, 1940, preceding sulfonamide therapy, this patient was given injections of a penicillin solution prepared in our own laboratories by Dr. Karl Meyer. Although proved to be highly effective in the treatment of experimental infections in animals, the potency of this preparation was not titered in Oxford units. Further penicillin therapy was not possible at that time because of the limited amount of material available. Although the quantity was too small to achieve a significant result, it is believed that this is the first occasion on which penicillin was employed clinically in this country.

On readmission, April 19, 1944, the patient was found to have a temperature of 103 F., an enlarged heart, aortic diastolic murmur, palpable spleen and clubbed fingers. Four blood cultures were positive for *Str. viridans*, 23 colonies per cubic centimeter, and the organism was one half as sensitive to penicillin as the standard strain. On April 25 penicillin was started, 200,000 units every day by intravenous drip. The clotting time was maintained between twenty-four and ninety minutes by subcutaneous injections of 200 mg. of heparin on April 20 and May 4. The temperature promptly returned to normal. On the fifth day penicillin dosage was changed to 25,000 units every three hours intramuscularly because of difficulty with veins. On the eighth day he developed a left hemiplegia and aphasia, apparently as the result of an embolus in the right internal capsule. The temperature rose to 104 F., gradually returning to levels of 99 and 100 F. at the end of the second week. After 3,090,000 units of penicillin had been given over a sixteen day period, therapy was stopped to permit evaluation of the situation. Blood cultures remained sterile and the clinical course was afebrile. The patient was observed in the hospital for three months, during which time there was some improvement in the hemiplegia and aphasia. On August 15 he was transferred to another institution for chronic care. Since then there has been no evidence of a recurrence of the infection and the general health of the patient has continued to improve.

In this unusual case it seems reasonable to suppose that the second illness, which occurred three and a half years after the first, represented a new infection rather than a recurrence of the original one.

CASE 15.—A. V., a man aged 37, without recognized history of rheumatic fever, was admitted on April 17, 1944 with a three months history of fever and weight loss. Physical examination revealed mitral and aortic murmurs and a palpable spleen. Four blood cultures were positive for *Str. viridans*, approximately 12 colonies per cubic centimeter. The infecting strain was one half as sensitive to penicillin as the standard strain of hemolytic streptococcus. Penicillin was started on April 26, 200,000 units daily by intravenous drip. The coagulation time was maintained between twenty and sixty minutes by the administration of 200 mg. of heparin subcutaneously on four occasions. The clinical course was uneventful. The temperature showed some elevation in the latter part of therapy, apparently as a result of reaction to heparin. Penicillin was discontinued on the twenty-first day, after a total of 4,150,000 units had been administered. After cessation of therapy the patient continued to have a low grade fever for twelve days. Blood cultures, however, remained sterile and he was discharged June 8, afebrile and in good clinical condition. Since then he has been seen on frequent occasions and has remained asymptomatic. The erythrocyte sedimentation rate remained elevated for several months but gradually returned to normal. He has gained 30 pounds (13.6 Kg.) in weight, looks the picture of health and has resumed his former occupation.

CASE 16.—O. M., a man aged 30 with a history of rheumatic fever at the age of 8, developed malaise, fever, cough and painful-finger tips in February 1944. On admission, April 26, there were petechiae on the soft palate, aortic and mitral disease, palpable spleen and clubbing of the fingers. Three blood cultures

were positive for *Str. viridans*, approximately 20 colonies per cubic centimeter. The organism was one eighth as sensitive to penicillin as the standard strain. Penicillin, 200,000 units every day by intravenous drip, was started on May 4, and clotting times were maintained between twenty and seventy minutes by subcutaneous heparin, 200 mg. every four or five days. The patient continued to have a low grade fever for two weeks, and then his temperature rose to 103 F., presumably as the result of thrombophlebitis at the site of the intravenous drip. At the end of the third week of therapy the temperature became normal and penicillin was stopped, after a total of 4,150,000 units had been given. Twenty-four hours later his temperature rose again, and blood culture two days later was positive. On May 29 therapy was resumed. Because of difficulty with veins he was given 25,000 units every three hours intramuscularly, and treatment was continued for two weeks. Fever persisted, and blood cultures remained positive. Accordingly, the dosage was increased to 300,000 units every day by intravenous drip, and therapy was continued for two more weeks. On this regimen the blood culture again became negative, although low grade fever continued. Therapy was discontinued on June 26, after a total of 7,100,000 units had been given. Four days later, however, blood culture was again positive. On July 5 penicillin was resumed, and on this occasion the patient was given 300,000 units daily by intravenous drip and 6 Gm. of sulfadiazine orally. Because of several episodes of phlebitis, it became necessary to resort to intramuscular injections after five days, and sulfadiazine was increased to 9 Gm. daily. This regimen was continued until July 17. In the succeeding two weeks his clinical condition improved, the spleen no longer was palpable and blood cultures were sterile. Although there was much doubt that the infection had been terminated, the patient was discharged on August 4 on a maintenance dose of 6 Gm. of sulfadiazine daily. One week later blood culture was again positive and he was readmitted on August 21.

Up to this time he had received a total of 15,700,000 units of penicillin in three courses over three months. Since his general condition remained excellent, and since the infecting strain was just as sensitive to penicillin as it had been originally, arrangements were made for resumption of intensive therapy. Starting on August 22 he was given 50,000 units approximately every two and a half hours by intramuscular injection for eighteen days, followed by 500,000 units daily by intravenous drip for a further period of twenty-three days. While on intravenous therapy the clotting time was maintained between thirty-six and seventy-four minutes by the administration of 200 mg. of heparin subcutaneously on three occasions. In spite of this intensive therapy he continued to have an irregular fever, and blood cultures were intermittently positive. Penicillin treatment was discontinued on October 3, and maintenance doses of sulfadiazine were instituted. Thereafter blood cultures continued to be positive. Although the patient's general condition had deteriorated very little since his first admission five months previously, the administration of 36,700,000 units of penicillin failed to terminate the infection. At present he is being maintained on sulfonamides pending a decision regarding further penicillin therapy.

CASE 19.—G. L., a woman aged 21 with a history of rheumatic fever at the ages of 13 and 16 and known to have mitral and aortic disease, was delivered of a normal child on March 5, 1944. The postpartum course was uneventful. On July 7 she complained of fever, chills and general malaise and was admitted five days later. On admission the temperature was 103 F. and the spleen was palpable. Five blood cultures were positive for *Str. viridans*, and the strain was one eighth as sensitive to penicillin as the standard strain. Penicillin was started on July 22, 40,000 units every three hours intramuscularly. The intramuscular route was chosen because of poor veins, and larger doses than usual were given because the infecting strain was relatively resistant. The clotting time was maintained between twenty-five and sixty minutes by subcutaneous heparin, 200 mg. on two occasions and 100 mg. on one occasion. The course was uneventful and essentially

afebrile. Blood culture was sterile three days after the institution of therapy and remained so thereafter. Penicillin was stopped after 3,880,000 units had been given over a twelve day period. She was allowed home sixteen days later in order that she might be with her husband during his leave from the Army. During the next three months she gained weight and strength and now feels and looks the picture of health. Blood cultures have remained sterile.

CASE 20.—E. C., a woman aged 40 with known rheumatic fever in childhood, was admitted on June 27, 1944 with a history of fever and malaise of two months' duration following dental extractions. Examination showed the presence of a mitral lesion, and five blood cultures were positive for *Str. viridans*. The infecting strain was one half as sensitive to penicillin as the standard strain. On August 8 penicillin was started, 25,000 units every three hours intramuscularly. The intramuscular route was used because of lack of suitable veins. Clotting time was maintained between twenty-six and seventy-seven minutes by the administration of 200 mg. of heparin every four or five days. On August 26 the clotting time rose to one hundred and ten minutes and the patient developed epistaxis. A transfusion was given with immediate satisfactory response. She continued to have a low grade fever, but the course otherwise was uneventful. Therapy was continued for three weeks, at which time a total of 4,200,000 units of penicillin and 1,000 mg. of heparin had been administered. Although her clinical condition was highly satisfactory, blood culture taken ten days after cessation of penicillin was positive. On succeeding days the temperature rose slightly, and penicillin therapy was reinstituted on September 17. On this occasion the dose was increased to 40,000 units every three hours intramuscularly, and treatment was continued for twenty-one days. Heparin, 200 mg., was administered subcutaneously on three occasions. The temperature remained below 100 F. and the patient was essentially asymptomatic. During the second course 6,360,000 units of penicillin was administered. Since discontinuance of therapy on October 7, blood cultures have remained sterile, the erythrocyte sedimentation rate has continued to fall and the patient states that she feels perfectly well.

The results of treatment in these 16 cases may be summarized as follows: In 11 patients the infection has apparently been terminated. All 11 have remained bacteria free and in excellent general health for periods of three months or longer since therapy was discontinued. One additional case has apparently responded satisfactorily but sufficient time has not yet elapsed to permit proper evaluation of the situation. In 2 patients the infection was temporarily controlled but recurred when treatment was stopped. Two patients succumbed; in each instance the terminal episode was apparently a cerebral embolus.

ANALYSIS OF CASES

In order that the experience gained in the treatment of the 20 cases described in this report may be helpful as a guide in the future therapy of this disease, the material is analyzed from several points of view.

Selection of Cases.—As stated in the introduction, the 5 cases described in the first part of this report were selected on a basis of the good clinical condition of the patient and a well defined sensitivity to penicillin on the part of the infecting strain. With the exception of 3 patients who were not accepted for treatment because the infecting organism was found to be almost totally resistant to penicillin, the 15 cases described in the second part of the report were unselected and represented consecutive hospital admissions from January to August 1944. Some of the patients were desperately ill when therapy was started, while others were in good general condition. It is worth commenting that the

patient in the poorest condition clinically (patient 12) made an apparently uneventful recovery, while 1 of the patients in excellent general condition (patient 16) failed to respond.

Primary Cardiac Disease.—In 18 of the cases the underlying cardiac disease was rheumatic in nature and in the remaining 2 congenital. Of the cases of congenital heart disease, 1 responded in a most satisfactory manner and the other was resistant, although the infecting strain was highly sensitive to penicillin. In the group with rheumatic heart involvement there were 10 cases of mitral disease and 8 cases of combined mitral and aortic disease. No correlation was observed between the valvular distribution of the rheumatic lesion and the outcome of therapy.

Probable Duration of Infection.—It was obviously impossible in many instances to determine even approximately the time of onset of the infection; in other cases the date could be fixed with a reasonable degree of certainty. As shown in the table, the probable duration of the infection at the time therapy was started varied from two weeks to fifteen months. In the majority of the cases symptoms had been present from two to three months. No direct relationship appeared to exist between the duration of the disease and the outcome of therapy. Two of the cases of shortest duration, two weeks and one month respectively, showed a very prompt response, but another case known to have been infected for fifteen months also responded favorably. On the other hand, 2 cases of two and two and a half months' duration respectively proved to be exceedingly refractory.

Penicillin Sensitivity of the Infecting Strain.—The method used in the determination of penicillin sensitivity is described elsewhere.² For convenience, the sensitivity of each strain was compared with that of a standard strain of group A hemolytic streptococcus (strain C203Mv). One strain was found to be twice as sensitive as the standard strain, five strains were equally sensitive, seven strains were one half as sensitive, three strains were one fourth as sensitive and four strains were one eighth as sensitive. In terms of the amount of penicillin, the sensitivity of the standard strain is such that the growth of a 10^{-2} dilution, containing approximately 3 million organisms, is inhibited by 0.017 unit. The approximate amount of penicillin necessary to inhibit growth of the arbitrary standard seeding of one strain was 0.008 unit, of five strains 0.017 unit, of seven strains 0.035 unit, of three strains 0.07 unit and of four strains 0.14 unit.

Analysis of the results of treatment according to the nature of the infecting strain offers little information of value at the present time. One case in which the organism was only one eighth as sensitive as the standard strain proved refractory (case 16), but in 3 other cases in which the organism was equally resistant the response was satisfactory (cases 9, 13 and 19). Two cases in which the organism was very sensitive (cases 6 and 17) failed to respond, while 3 other cases in which the strain showed the same degree of sensitivity responded promptly (cases 4, 10 and 12). It should be noted, however, that the results in those cases in which the strains belonged serologically to groups F and H were uniformly good. Mention has been made elsewhere of the fact that 3 other cases were not accepted for treatment because the infecting strains were highly resistant as judged by *in vitro* tests. The organisms

from these cases were from one hundred and sixty to eight hundred times as resistant as the standard strain. At the present time data are being accumulated on the relationship between the *in vitro* sensitivity of strains and the penicillin blood levels necessary to effect sterilization of the blood stream. It is believed that these studies will provide information of value in the future therapy of cases of this disease.

ANALYSIS OF THERAPY

In the present series of cases the method of penicillin administration, dosage and length of treatment varied greatly. As previously mentioned, the amount of drug available while the preliminary group of 5 cases was being treated was very limited, and it was not possible to plan for a sustained therapeutic regimen. As the supply increased, the methods of administration and dosage became more uniform, but it is felt that much further experience will be necessary before a standardized procedure is established.

Methods of Penicillin Administration.—In 7 cases the drug was administered by intramuscular injection at frequent intervals, usually every three hours. In 5 cases an intravenous drip was employed, and in 8 cases both methods were used at different times, as circumstances dictated. The results were apparently completely satisfactory in 5 of the 7 cases treated by the intramuscular route and in 4 of the 5 cases treated by intravenous drip. The two groups are so small, however, and other factors so variable that no conclusions can be drawn from these results. Each method possesses distinct advantages as well as disadvantages. The method of frequent intramuscular injections is simple and less trying on the patient but suffers from the disadvantage of failing to produce uniformly effective blood levels of penicillin. The technic of the continuous intravenous drip is more difficult and thrombophlebitis frequently develops at the site of injection, but uniformly effective blood levels are maintained throughout. More recently a continuous intramuscular drip, as suggested by the English workers and described in this country by Harris,⁷ has been used with apparently satisfactory results. It seems possible that this will represent the method of choice in the future.

Dosage of Penicillin.—The daily dosage varied from as little as 80,000 units in 1 of the early cases to as much as 500,000 units in 1 of the more resistant cases. The total amount given to each patient ranged from 830,000 to 36,700,000 units. It became apparent very early in the clinical trials that the requirements of each case varied greatly; and therapy was largely determined empirically. As experience accumulated a regimen of 200,000 units daily for three weeks was established as a standard. This appeared to be adequate for the majority of cases, but in 3 instances signs of infection recurred when treatment was discontinued and additional therapy was given. In succeeding courses the daily dose was increased to 300,000 or 320,000 units and in 1 case to 500,000 units, and treatment was continued for a longer period of time. Two of the cases failed to respond to this increased dosage, but in 1 case the result was apparently satisfactory.

Duration of Therapy.—In the present series, therapy was continued for periods varying from ten to sixty-two days. Cases 4, 7, 8, 12 and 19 were treated for ten, fourteen, fourteen, twelve and twelve days respectively, and the results were uniformly satisfactory. On the

Results in Twenty Cases of Subacute Bacterial Endocarditis Treated with Penicillin

Case No.	Patient	Age, Sex	Primary Cardiac Disease	Probable Duration of Infection	Infecting Organism		Dates of Therapy	Dose in Units and Route	No. Days	Total per Course and per Patient	Result	Follow-Up 11/1/41
					Type	Sensitivity to Penicillin, Units per Gc						
1	H. H.	27, ♀	Rheumatic	3 mos.	Streptococcus viridans	0.035	10/24/43-12/2/42 (intermittent)	5 10,000 q3h IM	23	1,430,000	Recovered	22 mos.
2	H. L.	23, ♀	Rheumatic	(a) 2½ mos. (b) 15 mos.	Streptococcus viridans	0.07	2/17/44 1/11/44 (intermittent) 3/18/44 4/10/44	5 10,000 q3h IM 100 200,000 IV drip or 25,000 q3h IM	17 24	975,000 3,542,000	Recovered	
3	F. R.	40, ♀	Rheumatic	(a) 3 mos. (b) 11 mos.*	Indifferent streptococcus	0.07	4/1/41 9/19/41 (intermittent)	10 20,000 q3h IM	41	4,517,000	Recovered	7 mos.
4	M. L.	24, ♀	Rheumatic	2 wks.	Indifferent streptococcus	0.017	4/8/43 4/17/43	10 20,000 q3h IM	38	6,970,000	Recovered*	10 mos.*
5	H. D.	23, ♀	Rheumatic	2 3 mos.	Streptococcus viridans	0.07	4/14/43 7/24/43 (intermittent)	10 20,000 q3h IM	31+	7,300,000	Recovered	18 mos.
6	O. M.	17, ♂	Congenital	5½ mos.	Indifferent streptococcus	0.017	1/6/44 1/27/44	200,000 qd IV drip	21	3,360,000	Died	
7	R. J., Jr.	17, ♀	Rheumatic	1 mo	Streptococcus viridans	0.15	1/13/44 1/27/44	20,000 q3h IM	11	1,900,000	Recovered	9 mos
8	P. M.	11, ♀	Congenital	3 mos.	Streptococcus viridans	0.095	1/18/44 2/11/44	100,000 qd IV drip	11	1,200,000	Recovered	8 mos.
9	R. G.	50, ♂	Rheumatic	4½ mos	Indifferent streptococcus	0.14	(a) 1/15/44 1/21/44 (convalescent) (b) 2/24/44 1/20/44	20,000 q3h IM 200,000 qd IV drip or 25,000 q3h IM	7 25	790,000 5,525,000	Recovered	
10	W. A.	40, ♂	Rheumatic	3 mos.	Streptococcus viridans	0.017	3/10/44 4/3/44	200,000 qd IV drip	32	6,315,000	Recovered	7 mos.
11	J. M.	30, ♀	Rheumatic	4½ mos.	Streptococcus viridans	0.035	3/24/44 4/11/44	100 200,000 qd IV drip or 25,000 q3h IM	21	4,005,000	Died	
12	N. W.	13, ♂	Rheumatic	3 mos.	Streptococcus viridans	0.017	4/1/44 4/25/44	120,000 qd IV drip	12	1,410,000	Recovered	6 mos
13	E. M.	10, ♀	Rheumatic	3½ mos	Streptococcus viridans	0.11	(a) 4/20/44 5/12/44 (b) 5/15/44 5/20/44	200,000 qd IV drip or 25,000 q3h IM 25,000 q3h IM	22 14	4,210,000 2,750,000		
14	C. A.	31, ♂	Rheumatic	1 mos.	Streptococcus viridans	0.075	4/25/44 5/11/44	200,000 qd IV drip or 25,000 q3h IM	36	6,060,000	Recovered	6 mos.
15	A. V.	37, ♂	Rheumatic	3 mos.	Streptococcus viridans	0.15	4/26/44 5/16/44	200,000 qd IV drip	16	3,090,000	Recovered	6 mos.
16	O. M.	30, ♂	Rheumatic	2½ mos	Streptococcus viridans	0.14	(a) 5/13/44 5/25/44 (b) 5/29/44 6/26/44 (c) 7/5/44 7/17/44 (d) 8/12/44 10/2/44	200,000 qd IV drip or 25,000 q3h IM 300 400,000 qd IV drip or 25,000 q3h IM 500 600 qd IV drip or 50,000 q2½h IM	21 23 12 42	4,150,000 4,150,000 7,100,000 21,300,000	Recovered	
17	M. K.	21, ♀	Rheumatic	2 mos	Streptococcus viridans	0.017	(a) 6/25/44 7/13/44 (b) 7/29/44 8/10/44 (c) 8/19/44 9/16/44 (d) 9/25/44 10/26/44	200,000 qd IV drip 10,000 q3h IM 5,000 q3h IM 200,000 qd IV drip	103 21 12 25	30,700,000 4,000,000 3,840,000 4,990,000	Relapsed	
18	I. W.	60, ♀	Rheumatic	3 mos.	Streptococcus viridans	0.035	7/12/44 8/1/44	25,000 q3h IM	85	18,380,000	Relapsed	3 mos.
19	G. L.	21, ♀	Rheumatic	3 wks	Streptococcus viridans	0.14	7/22/44 8/3/44	40,000 q3h IM	19	3,890,000	Recovered	3 mos.
20	E. O.	40, ♀	Rheumatic	2 mos.	Streptococcus viridans	0.035	(a) 8/8/44 8/29/44 (b) 9/17/44 10/7/44	25,000 q3h IM 40,000 q3h IM	21 20	4,200,000 6,360,000	Recovered	
									41	10,560,000	Recovered	1 mo

* Treated by Dr. Leo Loeve, Jewish Hospital of Brooklyn, to whom the patient was referred for combined penicillin and heparin therapy.

other hand, in cases 16 and 17 the infection persisted after one hundred and three and eighty-five days of treatment respectively. It is apparent, therefore, that the time for which treatment should be continued varies greatly from case to case. As the study proceeded, and as a more uniform supply of drug became available, the majority of cases were treated for an initial period of twenty-one days. If the infection persisted at the end of this time, further courses of variable length were given as circumstances indicated. The effect of larger daily doses of penicillin administered for shorter periods of time will be the subject of further investigation.

Heparin.—In the preliminary group of 5 cases treated in 1942 and 1943, heparin was not employed. At the time when arrangements were made to resume the study, Loewe and his associates⁸ reported their results with combined penicillin and heparin therapy. Since major embolic phenomena proved to be a serious complication in the preliminary group and since the method of administering heparin subcutaneously, as described by Loewe, appeared to be a safe procedure, this type of anticoagulant therapy was employed in the cases subsequently treated. In 1 patient the anticoagulant was used only to prevent thrombosis in collateral vessels following ligation of a mycotic aneurysm of the ulnar artery. In the majority of patients the coagulation time was maintained between thirty and sixty minutes; in other cases less intensive therapy was employed. The amount of heparin necessary to induce this change in clotting time varied greatly from patient to patient. Some patients received 200 mg. every four or five days and others lesser amounts. The majority of the patients tolerated the treatment reasonably well, but others complained of pain at the site of the injections. Not infrequently the administration of heparin led to systemic reactions with sharp febrile responses, which confused the clinical picture considerably.

Hemorrhagic complications resulting from heparinization were definitely observed in only 1 instance. In case 7 preretinal hemorrhages occurred in both macular regions when the clotting time was observed to be in the neighborhood of one hundred and fifteen minutes, which is much above the recommended safe clotting time of thirty to sixty minutes.⁸ A transfusion was given as soon as the complication was recognized, and the hemorrhages resolved without residual impairment of vision. In 2 other cases bleeding episodes occurred but heparin could not be incriminated with certainty. Major embolic episodes were observed in 4 patients who received adequate heparinization, but in 2 of these the event occurred several days after treatment had been discontinued. One patient developed a cerebral embolus at a time when his blood was adequately heparinized.

Present experience is inadequate to form an opinion as to the value of heparin therapy as an adjuvant to penicillin in the treatment of this disease. It will be noted, however, that the response in 2 cases in the preliminary series was satisfactory without heparin, and more recently several additional cases have responded satisfactorily without anticoagulant therapy. Much further experience in a considerable series of cases treated with and without heparin will therefore be necessary before an opinion can be expressed as to its value.

RESULTS

It is recognized that a long follow-up period will be necessary before the ultimate outcome can be determined in a chronic disease such as subacute bacterial endocarditis, in which the infection may remain latent for considerable periods of time. Present experience with penicillin therapy, however, suggests that the prognosis is excellent in cases which remain clinically and bacteriologically free from infection for a period of four weeks after treatment has been discontinued. At the present time 14 of the 20 patients are in excellent general health and have been free from all evidence of infection for at least three months since treatment was stopped. One additional patient is in excellent health and has been free from all evidence of infection for four weeks. It is believed that the prognosis in this case is good. In 12 of the 14 patients the follow-up period has been five months or longer, and 2 patients have been followed for periods of eighteen and twenty-two months respectively. Two patients responded temporarily to the administration of penicillin, but in spite of protracted treatment with large doses a relapse occurred when therapy was discontinued. These 2 patients are still in excellent general condition, and it is hoped that it will yet be possible to arrange for a therapeutic regimen which will finally terminate the infection. The remaining 3 patients have succumbed. In each instance death was apparently due to a cerebral embolus. In 2 of the fatal cases the infection was still present at the time of death, and in the third the situation was in doubt.

The change which has taken place in the 15 patients who have apparently recovered has been truly remarkable. With the exception of 3 patients, 2 of whom suffer from hemiplegia and 1 who subsequently developed a coronary occlusion, all the "recovered" patients have returned to work or resumed their former occupations.

SUMMARY

Twenty patients with subacute bacterial endocarditis were treated with penicillin. A preliminary group of 5 were treated in 1942 and 1943, and 15 were treated in 1944. The infecting organism was a streptococcus in all instances. Heparin was employed as an adjuvant to penicillin in the treatment of the majority. While it is recognized that a long follow-up will be necessary before the ultimate outcome is established, therapy was apparently successful in 15 of the 20. All 15 patients are now clinically and bacteriologically free from infection. In 2 of the remaining 5 patients the infection was controlled as long as penicillin was administered, but a relapse occurred when therapy was discontinued. These 2 patients are still in excellent general health, and it is hoped that it will yet be possible to arrange for a therapeutic regimen which will produce a satisfactory outcome. The remaining 3 patients succumbed. In each instance death was apparently due to a cerebral embolus. In 2 of the fatal cases the infection was still present at the time of death, and in the third the situation was in doubt. Further experience is necessary before an opinion can be expressed regarding the value of heparin as an adjuvant to penicillin in the treatment of this disease.

CONCLUSION

Patients with subacute bacterial endocarditis should be treated with penicillin if the infecting organism is a streptococcus sensitive to the action of the drug.

8. Loewe, Leo, and Rosenblatt, Philip: A New Practical Method for Subcutaneous Administration of Heparin, *Am. J. M. Sc.* 208: 54 (July) 1944.

ADDENDUM

Since the preparation of this report, 7 additional patients with subacute bacterial endocarditis have been treated with penicillin. In the last 5 of these penicillin was administered by continuous intramuscular drip and heparin was not employed. The results indicate that the response was as favorable in this group as in those patients in whom heparin was used. In 6 patients the infection has apparently been terminated. The seventh patient relapsed after one course and is now receiving additional therapy.

Comparative studies, which will be reported in detail elsewhere, show that as a rule higher blood levels are obtained in patients receiving penicillin by continuous intramuscular drip than in those receiving continuous intravenous drip. Since the intramuscular drip is also better tolerated by the patient and the technic is simpler, this method of administration appears to be the one of choice for patients receiving penicillin for prolonged periods.

620 West 168th Street.

THE TREATMENT OF SPONDYLOLISTHESIS

WALTER E. DANDY, M.D.
BALTIMORE

This study was begun with the thought that fixation of opposing vertebrae resulting from complete removal of an affected disk at the site of the spondylolisthesis would produce a much simpler and more effective fusion of the spine than the customary fusion with bone grafts. The observations from the series of patients operated on has led to unexpected conclusions; i. e. (1) that the spondylolisthesis is usually responsible for only part and at times none of the symptoms, (2) that in most (not all) instances it is not the spondylolisthesis or even the disk at its site that causes the symptoms but rather another disk or disks and (3) that therefore cure usually depends more on removal of the other disk or disks than on the one at the site of the spondylolisthesis, though this too must be extirpated.

The principal reasons for these seemingly paradoxical conclusions are that: 1. In only 3 of the 20 cases was there a protruding disk at the site of the dislocated vertebra. 2. In each of 3 cases there was a single and in 2 other cases two large protruding disks at other interspaces, whereas there was no protrusion at the site of the dislocation. 3. In only 2 of the 20 patients was no defective disk found in addition to the one at the spondylolisthesis (and as these 2 patients are not cured it is probable that they too have another disk). 4. Moreover, these statistical studies are strikingly similar to those for defective disks without spondylolisthesis. In a recent publication it was stated that about 80 per cent of defective disks were multiple; in this series of cases 90 per cent were multiple and it is quite probable that all are multiple, as the remaining 2 cases are not cured. It is difficult to believe that other disks are not always affected when the spinal column is thrown out of line by the spondylolisthesis. 5. It was also stated that only about 25 per cent of all disks were protruding, the remainder being of the small or so-called concealed type. From this group of cases 44 disks were removed and of these 11, or 25 per cent, were protruding. From these figures therefore there is no difference between the findings with and without spondylolisthesis.

It is my impression from this analysis that the spondylolisthesis is but an incident in the field of ruptured disks and that, on the whole, while it causes its share of symptoms it causes less than the contiguous disk or disks. Certainly any treatment that neglected the other disks would accomplish little if any result. Moreover, the reason for the development of spondylolisthesis is precisely the same as for defective disks; i. e., the outward shift in the lateral articulations in the lower three lumbar vertebrae and nearly always most pronounced at the fifth lumbar. Here the joint is frequently turned outward 90 degrees from the direction of those at the first and second lumbar vertebrae and in addition the joint is at times flat and vertical and with little or no flanges to keep the joint surfaces from slipping. At the third and fourth lumbar vertebrae these changes are less severe but are still great enough to induce defective disks; occasionally spondylolisthesis can occur at these disks (one in this series). And finally the signs and symptoms of spondylolisthesis are precisely the same as those of defective disks without spondylolisthesis. Only the x-ray appearance makes the differential diagnosis.

FUSION OPERATIONS BY AUTOGENOUS GRAFTS

Heretofore the standard treatment for spondylolisthesis has been spinal fusions with autogenous grafts. This might appear to be at least a rational procedure if the foregoing conclusion that other disks are equally concerned in symptoms was not known. But with this knowledge, fusion without removing the disks accomplishes nothing—it merely covers up the defective disks, both concealed and protruding—and the symptoms continue practically unchanged. From experience with probably 25 cases in which fusion has been done elsewhere I know this to be a fact—the backache and sciatica have continued. From this series 3, or 15 per cent, had had a total of seven fusion operations (done elsewhere) without benefit.

The avoidance of a fusion operation means a great saving to the patient. In the first place it is a prolonged major operative procedure. It is necessary to be hospitalized in a cast for two or three months. Moreover, many grafts are unsuccessful, many absorb; and, if infection should develop, which is a not uncommon experience, much or all of the graft is lost. And when a subsequent operation for removal of the disks is necessary, it makes the procedure exceedingly difficult and at times unsatisfactory. Finally, the graft is contraindicated and useless because it merely covers up the offending disks and adds nothing to the fusion that follows complete removal of the disks.

Following a disk operation there is no need for a cast. The patient can leave the hospital in a week to ten days. A light corset is advised for two or three months.

THE TREATMENT BY REMOVING THE DISKS

The three most important items in treatment are:

1. The complete removal of the affected disks.
2. The recognition of multiple disks.
3. The recognition of small (concealed) disks.

If a disk is thoroughly and painstakingly removed with a curet, it cannot recur. This does not mean that every particle of cartilage must be extirpated, but it does mean that no large amount can remain. The most difficult area of the disk to remove is dorsally on the contralateral side, and a recurrence with sciatica on the opposite side will occasionally occur. The incidence

of this, however, should be low—five times in the last 800 disks. If curets are not very sharp, cartilage may remain in any part of the disk and a recurrence follow. Up to the present writing this has occurred only once. These are only the exceptions that prove the rule and are due to the personal equation, not to the method. When disks recur the cavity in the disk remains open and does not fill with granulations. Under these circumstances the vertebra remains very loose (*mobility test of pressure on the spinous processes*). When a disk has been completely removed, the vertebra becomes absolutely tight and in three months no movement is possible with the maximum pressure on the spinous process, and it remains so. This means that fusion of the vertebrae has been attained. Stabilization of the spine is absolutely necessary for a cure. When the broad surfaces of the vertebrae unite, the fusion is just as perfect as by the most successful spinal graft. Admittedly this is fibrous union at least for a time, but it is nevertheless effective. There is as yet only slight proof that the union eventually becomes osseous, but this should be expected since bony surfaces are denuded of cartilage and it would be difficult to believe that such a course was not inevitable. There has been no evidence from an experience of two and one-half years that a disk once well healed will break down again. As a matter of fact this form of treatment probably induces exactly the same result that obtains when nature, slowly over the course of many years, absorbs the affected disk, a solid fusion resulting, or when nature heals a fractured vertebra including the disk. In a single case, three years after partial removal of a disk, roentgenographic proof of an osseous union has been disclosed. After total removal of a disk the process of healing should be the same.

Without the recognition of small nonprotruding (concealed) disks, the treatment would be entirely ineffectual. They are just as easy to recognize as the larger protruding disks and cause precisely the same though, on the whole, less intense symptoms. Their existence is always demonstrable by the mobility test. In this series the concealed disks numbered 33 (75 per cent) as against 11 (25 per cent) that were protruding. This is essentially the same ratio that obtains in disks without spondylolisthesis.

LOCALIZATION OF THE AFFECTED DISKS

The localization of the defective disks is now readily determined by the mobility of the joint when horizontal pressure is made on the spinous processes. When there is increased movement at the joint a defective disk with defective lateral joints is the cause. It is this movement that produces intensification of the backache on coughing and sneezing. This test may or may not lose its value when disks are narrowed in the x-ray films. But such x-ray findings are pathognomonic of a disk, so that this exception to the test is of no importance. However, in spondylolisthesis the mobility test at the spondylolisthetic disk is in many instances useless because the lateral joints may no longer be in apposition; the entire lamina then becomes so loose that it can be freely moved with the finger (8 cases). One can test the actual mobility of the vertebral bodies by direct pressure on them. In 5 cases with very narrow fifth interspaces it could be determined by pressure on the vertebra that there was no movement of the spine at the site of the spondylolisthesis. This means that the backache was due not to the slipped vertebra but from the contiguous disks or lateral joints. Although the

mobility test is useless at the site of the spondylolisthesis, it is effective in testing for other disks at the fourth and fifth lumbar vertebrae.

ANALYSIS OF CASES

Thirteen patients were males and 7 females. The ages were from 19 to 54. In the youngest patient symptoms began at 15. Three were under 30, 6 in the thirties, 6 in the forties and 5 in the fifties.

Sixteen of the 20 patients complained of pain on coughing and sneezing; in 2 it was absent and in 2 not noted.

Pain in the lower part of the back was present in all cases.

Pain down both legs was noted in 10, down one leg in 9, and in a single case there was no pain in the leg but only in the hip.

The duration of pain before operation was under one year in 3 cases, from one to five years in 5, from five to ten years in 4 and over ten years in 8. Pain was periodic in 17 and constant in 3.

A definite precipitating cause, usually a fall, heavy lift or severe cough, was elicited in 8; no cause was recognized in 12.

The location of the spondylolisthesis was between the fifth lumbar and the sacrum in 19 cases and between the third and fourth lumbar vertebrae in 1. The grade of spondylolisthesis varied from 0.5 to 1.5 cm. A posterior dislocation of the sacrum existed in 12 and an anterior dislocation in 7 cases. The x-ray examination showed great narrowing at the dislocated joint in all cases except 3; in these the joint was narrowed posteriorly only.

The ankle jerk was diminished or absent in 7 cases and unchanged in 13.

Time since operation was fifteen months the longest, from nine to twelve months in 2 cases, from six to nine months in 5 cases, from three to six months in 5 cases and under three months in 7 cases.

The number of disks was one disk for 2 patients (perhaps none, as these are not cured), two disks for 12 and three disks for 6.

Earlier statistics on defective disks placed 98 per cent of all disks at the fourth and fifth lumbar vertebrae. In this series the third disk was defective in 30 per cent of the cases. This is in keeping with, though somewhat higher than, the incidence of disks at the third lumbar in a large series without spondylolisthesis. There can be no doubt of the much higher percentage of disks at the third lumbar than the earlier figures indicated.

One of the patients in this series had the fourth and fifth disks removed a year ago and has just returned for the removal of the third lumbar (protruding) disk. The fourth and fifth laminae were solid (very loose at the first operation). A recurrence was therefore not possible and the offending disk had to be at the third. Pain in the front of the thigh is always indicative of a defective disk at the third lumbar, but this localizing pain may be absent; i. e., there may still be a defective disk at the third lumbar without pain in the front of the leg.

RESULTS

Since these patients have gone only from two weeks to fifteen months since the operation, the permanence of the results is not claimed; but on the basis of similar treatment of defective disks without spondylolisthesis and extending over a longer period of time I see no reason to expect recurrence later. It is believed that the cures will be permanent. For some time after this

study was begun the very high frequency of multiple disks was not appreciated; for that reason 3 of the patients in this series have returned for removal of an additional disk. The time since operation in these 3 cases has been counted from the last operation.

Two patients in the series have had fusion operations done at the time of the disk extirpations by our orthopedic surgeons, who were none too convinced that removal of the disks would induce fusion of the vertebrae. These cases are not considered in estimating the results. All the patients have been followed. Of the remaining 18 patients (excluding the fusions) 11 have gone more than three months since the operation. Of these 6 are symptom free and 2 are nearly so, having only a little pain for a few minutes in the morning after getting out of bed. Of the remaining 3 patients 2, the only ones with single disk removals, almost surely have another disk. However, 1 of these is greatly improved: the sciatica is gone. She complains of pains in the ribs and neck more than the original backache and sciatica, and in view of her psychogenic background I am reluctant to operate again. The other of these 2 has progressive muscular atrophy in addition to his spondylolisthesis. Heretofore I have refused to operate on perhaps half a dozen patients with known disks (but without spondylolisthesis) when progressive muscular atrophy was also present, but 1 was a relatively big, strong man and I thought he could be benefited for several years. He is not improved, and since his atrophy is increasing I do not feel that he should be operated on again. The remaining patient (operated on eight months ago) is not improved. He is waiting to see if he cannot avoid another operation.

Of the 7 patients who have gone less than three months since the operation, 2 have been operated on before (by myself) and have returned only recently for the removal of another disk in 1 case and 3 disks in another. In the latter case we were unable to find entry into the narrow disk at the spondylolisthesis and the fourth disk appeared normal, so that nothing was really done. Backache and sciatica were excruciating and of course unrelieved. For a time the problem of the patient's relief appeared insuperable. Three weeks later both of the sensory roots of the fifth lumbar nerves were sectioned, without relief. It was thought that perhaps the nerves might be compressed by the extreme dislocation of the sacrum. For weeks thereafter he sat up all night, being unable to lie down without more intense pain. Finally two weeks ago his sciatica became more intense on the opposite side. At operation on this side it was possible to enter and curet the cartilage from the disk at the spondylolisthesis, and concealed disks were removed from both the fourth and the third. He was immediately much improved and at this writing (two weeks after operation) the improvement continues. He has been unable to sleep lying down since the operation.

The remaining 3 patients (who have gone six to ten weeks) have been entirely relieved of sciatica, and the backaches are steadily lessening. One has been complicated by a return of an infection that followed a fusion operation a year earlier.

CONCLUSIONS

1. Subjectively and objectively, spondylolisthesis is precisely like defective intervertebral disks. Only the x-ray differentiated the two conditions.

2. For reasons noted in the text, it is my opinion that spondylolisthesis and defective intervertebral disks

are really identical in origin and the treatment is the same; i. e., complete removal of the disks.

3. In at least 90 per cent and probably all of the cases there are two or three disks (including the one at the site of the spondylolisthesis) causing the backache and sciatica, and a cure depends on the recognition and treatment of all the affected disks. The disk at the site of the spondylolisthesis causes no more and, on the whole, less symptoms than the other disks.

4. A cure results when the disks are completely removed. The end result of removal of the disks is fusion of the opposing vertebrae and therefore stabilization of the spine. This obviates the necessity of fusion by bone grafts to the spine.

5. Spinal fusions by grafts are never indicated either for spondylolisthesis or for defective intervertebral disks. Their continued use means that the disks have been improperly recognized or treated, or both.

Johns Hopkins Hospital.

ONE STAGE COMBINED RESECTION OF THE RIBS AND SPINAL FUSION FOR SEVERE SCOLIOSIS

WILLIAM H. BICKEL, M.D.

JOHN J. HINCHEY, M.D.

Fellow in Orthopedic Surgery, Mayo Foundation
AND

O. THERON CLAGETT, M.D.

ROCHESTER, MINN.

It has long been recognized that in cases of severe thoracic scoliosis the posterior part of the thorax on the convex side of the scoliosis is unduly prominent owing to the vertebral rotation with corresponding deformity of the ribs. Although arrest of the progress of the scoliosis is the prime purpose of therapy, a procedure which, in addition, eliminates this prominence is preferred by the patient. Failure to correct such deformity frequently causes dissatisfaction. Buchman¹ in 1930 reported a case in which he performed resection of the ribs for thoracic deformity owing to the patient's insistence on cosmetic improvement, although the progression of the scoliosis had been halted for a year by a spinal fusion.

Accordingly, in 1927 Whitman² proposed resection of the prominent ribs and the use of the resected portions of the ribs as bone grafts to fuse the curved spinal column in such cases. A graft from some other region rather than a Hibbs procedure is required, since the concave side of the scoliosis is almost inaccessible, the laminae and facets being rotated, twisted and overhung by the spinous processes and distorted convexity of the ribs. In some instances operation was done in two stages owing to the general poor condition of the patients and the length of the procedure. He reported 9 cases in which successful results were obtained with the procedure. In discussing Whitman's work, Campbell mentioned noting an increase in expansion of the thorax after he had employed a similar procedure.

From the Section on Orthopedic Surgery, Mayo Clinic (Dr. Bickel), and the Division of Surgery, Mayo Clinic (Dr. Clagett).

Read before the Section on Orthopedic Surgery at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1. Buchman, Joseph: Cosmetic Result in a Case of Marked Scoliosis with Rotation of the Ribs Treated by Convex Frame, Spine Fusion and Rib Resection, *Am. J. Surg.* 8: 1081-1083 (May) 1930.

2. Whitman, Armitage: A Variation in the Operative Treatment of Structural Scoliosis, *J. A. M. A.* 89: 2159-2161 (Dec. 24) 1927.

Cleveland³ has stated that thoracoplasty itself may produce scoliosis toward the side of the resection. Wenger⁴ said that resection of ribs has little influence in producing scoliosis if the transverse processes of the vertebrae are not injured or removed. According to Clagett,⁵ careful attention to the integrity of the spinal musculature during thoracoplasty will prevent lateral curvature of the vertebral column.

The cases in which operation is performed are usually the ones in which efforts at conservative treatment have not been attended with success and the scoliosis has become progressively worse. Associated with the scoliosis is the gross distortion of the wall of the thorax. If the disease is allowed to proceed without any form of operative treatment, symptoms referable to the back and an unsightly deformity usually will develop. Since the majority of the patients are adolescent girls, the most frequent complaint mentioned is the deformity.

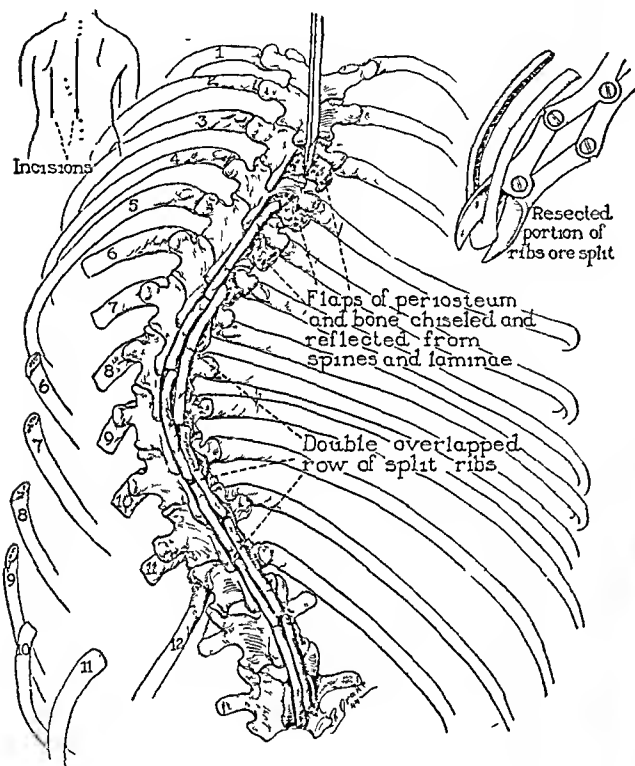


Fig. 1.—Diagrammatic sketch showing split ribs in place in prepared bed, inset shows incisions most frequently used

If the deformity can be corrected to some extent and if the scoliosis can be arrested by spinal fusion by the same procedure without undue risk to the patient, we can see no objection to this type of surgical procedure.

Resection of the ribs and the use of the removed segments of the ribs to fuse the spinal column has been performed in 11 cases in the past thirteen years at the Mayo Clinic; in 8 of these cases the operation has been done in the past four years. For seven to ten days before operation the patient is kept on a curved hyperextension frame the apex of which corresponds to the point of greatest convexity of the spinal curve. During this period traction of 6 pounds (2.7 Kg.) is applied to the head and feet. Resection of the ribs and spinal fusion are done as a single procedure, the former

by a thoracic surgeon and the latter by an orthopedic surgeon, the two having previously collaborated in deciding on both the number and the portion of ribs to be resected and the number of vertebrae to be fused. Originally a curved incision over the spinal column



Fig. 2—*a*, idiopathic scoliosis with long sweeping curve in case 1 prior to operation, *b*, progressing spinal fusion from fourth thoracic to the third lumbar laminae and spinous processes, some improvement has occurred in the deformity

was used, but this was abandoned as the resulting scar serves to accentuate the deformity. The procedure can be carried out through one long straight incision over the spinal column; but more frequently two parallel incisions are made, one over the convexity of the ribs and one over the region to be fused—as there is less

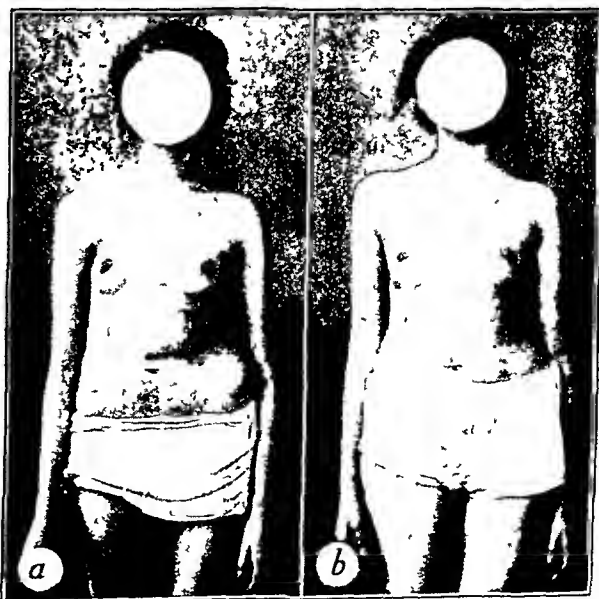


Fig. 3—Frontal view of patient 1: *a*, before operation, *b*, six months after operation

likelihood of disturbing the integrity of the spinal musculature. The ribs are resected subperiosteally throughout the extent of the thoracic prominence. The resected portions are then split lengthwise and placed in an overlapping double row along the whole extent of the concave side of the scoliosis curve next to denuded

3. Cleveland, Mather: Lateral Curvature of the Spine Following Thoracoplasty in Children, *J. Thoracic Surg.* 6:595-604 (Aug.) 1937.

4. Wenger, H. L.: Rib Resection in the Treatment of Scoliosis, *Arch. Surg.* 44:119-128 (Jan.) 1942.

5. Clagett, O. T.: Personal communication to the authors.

laminae and spinous processes from which cortical and cancellous bone have been reflected laterally (fig. 1). Their own curve corresponds strikingly to that of their spinal bed and they may be partially broken, like a greenstick fracture, to obtain closer coaptation. They are held in place by closure of the overlying muscles and fascia. No graft from any other source is necessary; there is always more than enough bone from the resected portions of the ribs. Immediately after operation the patient is kept on a straight Bradford frame for two weeks, being turned from the supine to the prone position and vice versa at regular intervals. The use of the previously mentioned traction and the hyper-extension frame is then resumed for four weeks; a plaster body jacket then is applied by using a Goldthwaite frame. The patient is permitted to be up and around for a week. The cast then is removed and a new one is applied from the occiput and chin to include the iliac crests. The patient is held in upright suspension during application of the cast. The second cast is worn for approximately four months and then it is



Fig. 4—Lateral view of patient 1: *a*, before operation; *b*, six months after operation.

replaced by a corset or Taylor brace, which is used for six months. At this time such activities as swimming and breathing exercises are begun. The brace or corset is gradually discarded and there is a progressive return to normal activity.

REPORT OF CASES

We shall report cases which are representative of the 11 cases in this series:

CASE 1.—A girl aged 15 years, seen first at the clinic on May 21, 1935, had had a minor fall three and a half years previously, and a deformity of the spinal column had been noted subsequently. She had a severe thoracolumbar scoliosis on the right side with great deformity of the ribs (figs. 2 *a*, 3 *a*, 4 *a* and 5 *a*). On May 30, 1935 portions of the seventh to the tenth ribs inclusive were removed and rib grafts were inserted from the fourth thoracic lamina and spinous process down to include the second lumbar lamina and spinous process on the concave side of the curve. Her postoperative course was uneventful and she was dismissed from the hospital in fifty-two days wearing the usual cast applied in suspension, which included the chin and occiput and extended well onto the iliac crests.

When the patient returned to the clinic for examination on Nov. 6 and again Dec. 17, 1935 the spinal column apparently was solidly fused and examination revealed that the deformity was greatly improved (figs. 2 *b*, 3 *b*, 4 *b* and 5 *b*). Her subsequent course has been entirely satisfactory and no progression of the deformity has taken place in the past nine years.

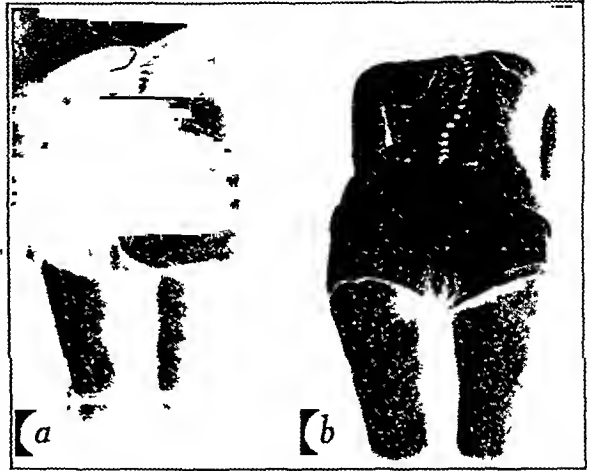


Fig. 5—Posterior view of patient 1 with back flexed to accentuate thoracic deformity: *a*, before operation; *b*, six months after operation.

CASE 2.—A woman aged 22, seen first at the clinic on Aug. 12, 1942, had noted a curvature of the spinal column for the past nine years. Progression of the curve was thought to have occurred two years previously, but the patient had not complained of tiredness and aching in the back on overexerting herself. There had been some increase in the prominence of the left hip, and it was thought by the examining physician that the lumbar curvature was increasing. She presented a gross right thoracolumbar scoliosis with a single sweeping curve (figs. 6 *a*, 7 *a* and 8 *a*).

Operation was performed on Feb. 4, 1943 after a preliminary period of traction. Prominent portions of the sixth to the

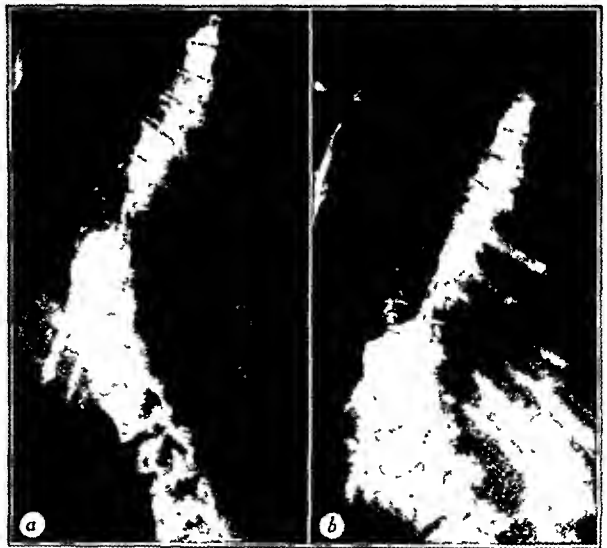


Fig. 6—Idiopathic scoliosis in case 2. *a*, before operation, *b*, solid fusion of grafts from the fifth thoracic to the third lumbar laminae and spinous processes one year after operation; there has been some progression of the scoliosis.

ninth ribs inclusive were resected on the right side and used as grafts for the prepared laminae and spinous processes of the fifth thoracic vertebra to the third lumbar vertebra. The postoperative course was marred by some respiratory difficulty because of a pleural effusion on the twenty-sixth postoperative day. Eight hundred cc. of serosanguineous fluid was aspirated

on this day and 600 cc. on the following day, with rapid subsidence of symptoms until she was dismissed from the hospital wearing a cast on the seventieth day after her admission. The patient returned to the clinic for an examination on July 20, 1943. The cast was removed and a brace applied. On Feb 11, 1944 she was examined again and roentgenograms

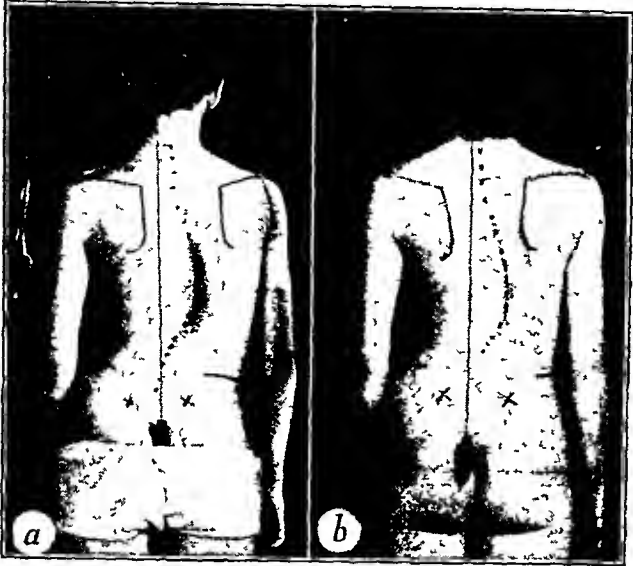


Fig 7—Posterior view of patient 2 a, before operation, b, one year after operation

and photographs were made (figs. 6b, 7b and 8b). She had no symptoms and had increased her activities to include swimming and dancing. She was told to assume normal activity gradually. In a recent letter she said that her progress has been satisfactory.

CONSIDERATION OF CASES

In this group of 11 cases the characteristic features corresponded to those generally reported.⁶ Ten of the patients were females and 1 was a male; their ages



Fig 8—Appearance of patient 2 a, before operation, showing rib deformity with spinal column flexed, b, improvement in the deformity of the thoracic cage one year after operation

varied from 11 to 22; the average age was 16 years. The scoliosis had been noticeably present for from one to thirteen years; the average duration was six years. In 10 cases the scoliosis was on the right side; in 1

case it was on the left. In 3 cases the scoliosis was congenital (fig. 9) and in 1 case it occurred after poliomyelitis. No known cause could be determined in the other cases. Previous therapy, which had included braces, casts and exercises and manipulation, had failed to halt the progress of the scoliosis. In 2 cases no treatment had been employed (table 1). The number of involved ribs ranged from three to six. Usually, from 2 to 5 inches of the respective ribs was resected. The amount of the ribs resected varied with the position of the rib as related to the scoliosis; it decreased as the distance above or below the apex of the curve increased. Portions of the first, second or twelfth ribs never were resected; portions of the third and eleventh ribs were resected in only 1 instance. The number of vertebrae fused ranged from eight to fourteen—the whole dorsal vertebral curvature was grafted in each instance. Lumbar vertebrae were included in the grafting procedure in all but 2 cases (table 2).

TABLE 1.—Clinical Data

Case	Age, Yrs	Sex	Etiology	Direction of Thoracic Curvature	Known Duration of Scoliosis, Yrs.	Previous Therapy
1	15	♀	Congenital	Right	10	Casts, braces and exercises
2	15	♀	.....	Right	3 1/2	Cast
3	14	♀	Congenital	Right	2 1/2	Brace
4	20	♀	.....	Right	7	Brace
5	18	♀	.....	Left	13	Braces
6	17	♀	.....	Right	2	Brace
7	22	♀	.....	Right	10	Exercises
8	11	♀	Congenital	Right	11	Exercises and stretching
9	16	♀	.....	Right	1	None
10	17	♀	Poliomyelitis	Right	6	None
11	15	♀	.....	Right	2	Casts, corset and brace

TABLE 2.—Ribs Resected and Vertebrae Fused

Case	Ribs Resected		Vertebrae Fused	
	Ribs	No	Vertebrae	No
1	Fourth to ninth	6	Upper thoracic.	..
2	Seventh to tenth	4	Fourth thoracic to third lumbar	12
3	Sixth to eighth	3	Fifth thoracic to second lumbar	10
4	Seventh to tenth	4	Third thoracic to third lumbar	13
5	Sixth to eighth	3	Third thoracic to tenth thoracic	8
6	Third to seventh	5	Third thoracic to first lumbar	11
7	Sixth to ninth	4	Fifth thoracic to second lumbar	10
8	Fourth to seventh	4	Second thoracic to second lumbar	13
9	Fifth to ninth	5	Fifth thoracic to first lumbar	9
10	Sixth to eleventh	6	Second thoracic to third lumbar	14
11	Fourth to eighth	5	Third thoracic to third lumbar	13

In 3 cases it was deemed advisable to administer transfusions of blood as a supportive measure. One thousand cc. of blood was transfused in 2 cases and 500 cc. in the other case. In 3 cases the operation was followed by pleural effusion. In each of these cases the effusion was situated on the side of the rib resection. In 1 a massive effusion occurred the fourth week after operation. Aspiration of 800 cc. of fluid relieved the symptoms; thereafter the effusion was minimal, until it disappeared the following week. In another case the effusion appeared on the twelfth day after operation and persisted until the fifth week before it subsided. The patient had some slight difficulty in respiration and a low grade fever during this period. In the third case there was slight respiratory distress from the fifth to the seventh day and a slight pleural effusion was noted; improvement then took place spontaneously. In these cases there was no other complication and none of the patients died. The patients withstood a rather extensive operation very well, and in no case was it necessary to interrupt the procedure or have concern over

6. End Result Study of the Treatment of Idiopathic Scoliosis: Report of the Research Committee of the American Orthopaedic Association, J Bone & Joint Surg. 23: 963-977 (Oct.) 1941.

the patient's condition. If after the resection of the ribs further operation is not advisable, the ribs can be preserved by refrigeration and used at a subsequent operation for grafting of the spinal column.

Results.—In this series of 11 cases follow-up data were obtained for nine months to twelve years after operation. In 3 cases the operation has been done within the past year. In all cases fusion was solid at the end of six to nine months. In 3 cases in which operation has been performed rather recently it cannot be stated definitely that the deformity will not progress; however, improvement had occurred at the time this paper was written. In 1 case a very slight increase in the spinal curvature has taken place since operation. In 1 case, in which operation was performed a year and eight months ago for congenital scoliosis with a single sweeping curve, there has been a definite increase in the scoliosis. Fusion was accomplished from the second thoracic to the second lumbar vertebrae and the recent breakdown is apparently in the lower three lumbar vertebrae. Another fusion operation is being contemplated. In the other cases the deformity has remained stationary or has improved slightly.

Satisfaction concerning the cosmetic end results was expressed in all cases. In 1 case, however, the vertebral rotation was so extreme that the vertebrae were just under the deformed ribs and their transverse processes caused the scoliotic prominence in the main to be retained after resection of the ribs. Consequently,

six months after operation extensive regeneration had occurred and the new portion conformed to the corrected contour of the thoracic wall (fig. 10). Clinically, the thoracic cage is rigid after about six months.

COMMENT

This paper is based on 11 cases of scoliosis in which resection of ribs and immediate spinal fusion was performed to correct the deformity of the thoracic wall and arrest the scoliosis. It is felt that this procedure is worthy of more extensive use and has a definite place in the treatment of severe scoliosis.

ABSTRACT OF DISCUSSION

DR. EDWARD L. COMPERE, Chicago: My experience in the use of this method has not been wide. I have reviewed records of 9 patients in whom rib resection and fusion of the spine with the resected ribs, in the treatment of severe scoliosis, had been done by me or by one of my associates. Five were operated on within the past two years. This procedure has a definite place in the field of orthopedic surgery. However, certain hazards should be considered. Bisgard, while on the staff at the University Hospital in Ann Arbor, reported a series of cases of scoliosis that developed following rib resections for thoracoplasties. In Bisgard's patients the convexity of the spine was toward the side from which the ribs had been removed. The ribs are of importance in maintaining the shape of the thorax and they act as struts to support the spine itself. Especially are they important in growing children. It is a mistake to remove ribs in young children. The growing child who has lost support from the ribs may develop a progressive curvature in spite of the fact that the resected ribs have been used to fuse the spine. In cases in which I have used ribs for resection I have not attempted to correct the curvature beforehand. I have selected for this operation older patients whose deformity was so advanced that it seemed futile to attempt correction. In the drawing by which the authors illustrated the technic of their operation the ribs had been resected at a point 2 or 3 centimeters from their vertebral articulations. When the vertebral ends of the ribs are left long they may protrude so sharply that they create a ridgelike projection that is fully as objectionable as the original deformity. In my opinion this operation should be carried out in two or more stages if the extent of the fusion must include more than six vertebral segments.

DR. DANIEL H. LEVINTHAL, Chicago: I have had no personal experience with this method because I have almost always been contented to use large, long, either single or double tibial grafts, with the addition of multiple chip grafts, especially in the area between the curvature (if any remains) and the straight graft. In my service at Cook County and Michael Reese hospitals we start saline and glucose and give 500 to 1,000 cc. of whole blood during the operative procedure. We use two surgical teams. These two teams can work at the same time. The tibial graft can be removed at the same time that the bed is being prepared. Most patients, despite arrest or correction of the scoliosis, feel that since they have submitted to extensive surgery the rib and scapular convexity should have been corrected. Since most of the patients are females, many of them object to the resultant scars. I wonder how many of the authors' patients complained about the two long scars. I should like to ask whether after rib resection the inferior angle of the scapula has been sutured downward and medially in an effort to correct its winged position and in an effort to pull that portion of the shoulder girdle posteriorly to a corrected position. I have always made it a point in the preoperative discussion with the parents to state that I will attempt to correct or arrest the scoliosis, and I mention that the anterior projection of the shoulder—usually it is the right shoulder—and the convexity of the vertebrae (the so-called razor back deformity) will remain. One point which has not been mentioned is the opposite convexity of the left anterior ribs with projection of the breast and ribs forward. I am wondering whether that left anterior projection was increased when the circumference of the rib cage was interrupted by the multiple rib resections.



Fig. 9.—Structural scoliosis caused by congenital hemi-vertebra (tenth thoracic).



Fig. 10.—Idiopathic scoliosis: a, before operation, showing deformity of ribs; b, regeneration of resected ribs on the right side six months after operation.

in this case less improvement than expected was obtained. Roentgenographic examination of the ribs six weeks after resection revealed early regeneration of the resected portions from the remaining periosteum;

DR. W. H. BICKEL, Rochester, Minn.: The literature is particularly devoid of any reports on these cases, and it is only by an accumulation of various series of cases that we shall be able to form a definite opinion as to the value of this procedure. The amount of rotation which takes place in a spine after fusion is a rather moot question. If the fusion is solid it is difficult to see how the remaining rib nubbins can cause difficulty. One patient in our series did complain of tenderness over the projecting portion of the remaining rib. Dr. Levinthal mentions saving the transverse processes in the resection of the rib. I think that has been emphasized in the literature by those performing thoracoplasties. They say if one does not damage the transverse process no scoliosis will develop. Dr. Clagett feels that the integrity of the spinal musculature is more important than the conserving of the transverse processes. That is one of the reasons for the two incisions we have been using. In our cases there has been no apparent increase in the actual deformation of the thoracic cage. It seems reasonable to me to assume that if one decreases the deformity in the posterior ribs on the opposite side the anterior deformity will cave in and be less prominent following the resection of the ribs. I think our photographs and the observations of these patients bear out that point. There have been no recorded complaints regarding the scars. Of course, with midriff bathing suits, some complaints may ensue in the future. We have never used scapular fixation. It has been our method to resect the ribs high enough so that the scapula will not be pushed out, rather than to try to fix the scapula over bulging ribs posteriorly.

THE PREVENTION AND ATTENUATION OF INFECTIOUS HEPATITIS BY GAMMA GLOBULIN

PRELIMINARY NOTE

JOSEPH STOKES JR., M.D.

PHILADELPHIA

AND

CAPTAIN JOHN R. NEEFE

MEDICAL CORPS, ARMY OF THE UNITED STATES

Infectious hepatitis (epidemic hepatitis, infective hepatitis) has been stated to be one of the most important diseases of the present war.¹ It has also been a serious problem in civilian populations throughout the world. Owing primarily to the lack of knowledge concerning the etiologic agent and its mode of transmission, adequate methods of prevention and control have not as yet been developed. It is our purpose in this preliminary report to present data which suggest that gamma globulin² from large pools of adult human serum may be effective in the control of certain epidemics of this disease.

Parenteral injections of homologous blood products (whole blood, pooled plasma or serum, pooled measles and mumps convalescent plasma, and so on) have occasionally been followed by hepatitis. These blood products have usually been derived from single individuals or, in the case of pools, from relatively small numbers of young adults. The frequency with which small pools contain a "hepatitis producing" agent suggests that such an agent might be expected in large pools with even greater frequency. Yet several thousand injections of gamma globulin (used for prevention and attenuation of

measles), prepared from large pools of adult plasma, have not been followed by hepatitis. It has been shown experimentally that certain virus agents, added to plasma which does not contain their specific neutralizing antibodies, are not inactivated by the process of fractionation and subsequently can be demonstrated in the globulin fraction II + III.³ Thus the absence of hepatitis following the use of gamma globulin is not necessarily explained by inactivation of the causative agent by the process of fractionation of plasma. The neutralization of the "hepatitis producing" agent by antibodies in gamma globulin would offer, however, a possible explanation of the apparent absence of hepatitis following the injections of gamma globulin.

Because the evidence thus far available suggests that the virus agent responsible for epidemic or infectious hepatitis is present in the blood during the preicteric and early icteric phases of the disease, it seemed reasonable to postulate that such neutralizing antibodies in gamma globulin might possibly be effective in aborting or in attenuating this disease if administered during the incubation period or preicteric stage. The relatively long incubation period of infectious hepatitis and the delayed onset of the icteric stage are time factors which would facilitate the use of gamma globulin for this purpose. These theoretical and factual observations led to the use of gamma globulin in an extensive epidemic of infectious hepatitis that occurred during August and September 1944 in a summer camp for boys and girls.

The epidemic, details of which will be reported elsewhere, began on Aug. 1, 1944 and by August 14, when we were notified of its existence, approximately 80 persons had developed hepatitis. The occurrence of new cases on the 15th and 16th of August suggested that the entire camp population had been or would be exposed to the causative agent and that many others of the group could be expected to develop the disease. The situation seemed favorable, therefore, for a critical test of the hypothesis that gamma globulin might include specific antibodies capable of inactivating, partially or completely, the causative agent of infectious hepatitis. Using an arbitrary intramuscular dosage of 0.15 cc. per pound of body weight, sufficient gamma globulin⁴ was available for the injection of 53 persons. Of 159 well boys between the ages of 6 and 15 living under the same environmental conditions in the boys' camp, 29 were injected with globulin, leaving 130 as controls. Of 132 well females between the ages of 6 and 30 living in the girls' camp, 16 were injected with globulin, leaving 116 as controls. Eight other men between the ages of 16 and 40 from miscellaneous camp groups also were injected. As expected, many additional cases of hepatitis developed during the five weeks following the globulin injections. In the accompanying table the incidence of hepatitis in the injected groups is compared with that in the control groups. In the discussion of these data the term hepatitis includes both icteric and nonicteric cases. Approximately one third of those who became ill with the typical symptoms failed to develop jaundice. Liver function studies on representative nonicteric cases confirmed the diagnosis of hepatitis without jaundice. The data on cases of hepatitis with jaundice are shown separately because they were usually more severe and of longer duration than the nonicteric cases. The boy and girl groups also

From the School of Medicine and Hospital of the University of Pennsylvania and the Children's Hospital, Philadelphia.

This investigation was aided in part by the Commission on Measles and Mumps, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, Preventive Medicine Service, Office of the Surgeon General, U. S. Army, Washington, D. C.

1. Witts, L. J.: Some Problems of Infective Hepatitis, *Brit. M. J.* 1: 739-743 (June 3) 1944.

2. Cohn, E. J.; Oncley, J. L.; Strong, L. E.; Hughes, W. L., Jr., and Armstrong, S. H., Jr.: The Characterization of the Protein Fractions of Human Plasma, *J. Clin. Investigation* 23: 417-432 (July) 1944.

3. Enders, J. F.: Personal communication to the authors Cohn and others.²

4. The gamma globulin employed in this study (lots 12 II GI L329 and II GI L371) was prepared by the Harvard Plasma Fractionation Laboratory. Lot 12 II GI L329 was an experimental lot prepared under conditions slightly different from those employed in the preparation of the standard fractions being distributed for measles prophylaxis.

have been presented separately in the table because the course of the epidemic suggested that these two groups were not exposed to the disease at the same time, a fact which is of importance in the interpretation of the findings. The results in the 8 injected males from the miscellaneous camp groups are not shown separately in the table because of the lack of a satisfactory control group for comparison. However, these have been included in the data referring to the entire camp group which show the results in the total injected group; the controls for this group include, in addition to the boy camper and female control groups, those in miscellaneous camp groups who were well at the time of the globulin injections. Such a combination is permissible because the final incidences in all the camp groups indicate that all were eventually exposed to the disease. The statistical significance of these data was tested by the chi square method.

The results show that the incidence of hepatitis in the groups injected with gamma globulin was significantly lower than in the control groups. In respect to the boy camper group, 13.3 per cent of those injected developed hepatitis as compared with 69 per cent of the controls. Overt jaundice appeared in 46 per cent of the controls, but this was not observed in any of those who received globulin. In the female group, hepatitis

results were obtained in the boy camper group. It is probable that most of this group received globulin earlier in the incubation period than did the girls, because the epidemic began in the boys' camp approximately a week later than in the girls' camp. The apparent difference in the effectiveness of gamma globulin in these two groups would seem to be satisfactorily explained on this basis.

The results indicate, therefore, that gamma globulin is capable of preventing or attenuating infectious hepatitis when administered to exposed persons during the incubation period of the disease. They also suggest that the best results are obtained when the globulin is injected early in the incubation period. Gamma globulin thus offers promise of being of great value in the prevention and control of other epidemics of infectious hepatitis, and, since no other satisfactory methods for the control of this disease have been developed, further trials of gamma globulin in such epidemics seem definitely indicated. The effect of infectious hepatitis is similar to that of measles.⁵ In addition to its preventive value in measles, globulin is often of therapeutic value if injected soon after the onset of the initial symptoms; it seems possible that gamma globulin also might be of therapeutic value in infectious hepatitis if administered early

Effect of Gamma Globulin in Infectious (Epidemic) Hepatitis

Group and Age Ranges	Status	Number	Hepatitis		Hepatitis with Jaundice		Chi Square *	
			Number	Per Cent	Number	Per Cent	Hepatitis	Jaundice
Boy campers (6-15)	Injected with globulin	29	4	13.3	0	0	29.4	21.7
	Controls	130	90	69.0	60	46		
Females (6-30).....	Injected with globulin	16	3	18.7	3	18.7	16.59	4.04
	Controls	116	82	70.6	52	45		
Entire camp group (3-40)	Injected with globulin	53	11	20.8	3	5.7	37	27.5
	Controls	278	185	67.0	125	45		

* Except for the test for the incidence of hepatitis with jaundice in the female group, chi square values computed by the method of the four fold independence table indicate that such results would be expected by chance less often than one in a thousand. For the one exception, however, the probability is less than one in twenty trials.

occurred in 70.6 per cent of the controls but in only 18.7 per cent of the injected group. Overt jaundice developed in 45 per cent of the controls but in only 18.7 per cent of those injected. In terms of the combined groups, representing 53 persons injected with globulin and 278 controls, hepatitis occurred in 67 per cent of the controls but in only 20.8 per cent of those injected. Of the 53 persons receiving globulin, not one developed visible icterus of the skin. However, 3 of the 16 girls who received globulin developed scleral icterus, which, however, persisted for only four, five and seven days respectively. The average duration of icterus in the 34 controls for whom complete data are available was 14.2 days. These observations suggest that the effect of gamma globulin in the 3 girls was an attenuation of the disease.

The onset of hepatitis in the 11 persons who received gamma globulin occurred during the first ten days after the globulin had been injected. No additional cases occurred among the injected group after this time. However, cases continued to appear among the controls for thirty-two days after the date of the globulin injections. This would suggest that the administration of gamma globulin late in the incubation period resulted in attenuation, rather than prevention, of the disease. However, the data indicate that the disease was entirely prevented in some cases, this probably occurring in those who received the globulin early in the incubation period. This is supported by the fact that the best

in the preicteric period. For this reason the use of gamma globulin as a therapeutic measure in early hepatitis would also seem to be worthy of trial.

SUMMARY

During an epidemic of infectious hepatitis in a summer camp for boys and girls gamma globulin was injected intramuscularly into 53 of 331 persons who at the time showed no signs of the disease. The results, which are statistically significant, indicate that gamma globulin is capable of preventing or attenuating infectious hepatitis when administered to exposed persons during the incubation period of the disease. This effect is comparable to that observed with the use of gamma globulin in measles. Although the data suggest that the best results are obtained when the globulin is injected early in the incubation period, it seems possible that, as in measles, it may also be of therapeutic value if given early in the preicteric stage of hepatitis. The results obtained in this epidemic are sufficiently encouraging to warrant further trials of gamma globulin in the control of future epidemics of this disease. This is especially desirable because no other effective control measures have as yet been developed.

1740 Bainbridge Street, Philadelphia 46

5 Stokes, J. Jr.; Maris, E. P., and Gellis, S. S. Use of Concentrated Normal Human Serum Gamma Globulin for the Prevention and Attenuation of Measles. *J. Clin. Investigation* 23: 531-541 (July) 1944.
Janeway, C. A. Clinical Use of Products of Human Plasma Fractionation. II Gamma Globulin in Measles. *J. A. M. A.* 126: 674 (Nov. 11) 1944.

TRANSMISSION OF PRIMARY ATYPICAL PNEUMONIA TO HUMAN VOLUNTEERS

COMMISSION ON ACUTE RESPIRATORY DISEASES

FORT BRAGG, N. C.

Etiologic studies of primary atypical pneumonia have been described in several recent publications.¹ It has been shown that bacteria,² rickettsias,³ fungi⁴ and viruses, particularly those of the psittacosis group,⁵ may produce the syndrome of atypical pneumonia. No etiologic relationship to these known agents, however, has been demonstrated in the majority of cases, and the assumption has been made that an unknown virus is the causative factor.

Various pneumotropic agents have been isolated in animals,⁶ but confirmation of the relationship of these agents to the human disease has been lacking. During the past three years, extensive animal experimentation has been undertaken by the Commission on Acute Respiratory Diseases.⁷ Sputums, throat washings and blood obtained from patients, and pathologic material from fatal cases, have been utilized. Various routes and methods of inoculation have been employed. No bacteria or viruses bearing a direct etiologic relationship to the human disease have been isolated in the developing chick embryo, in chickens, doves or Java rice birds and in seven mammalian species. In view of these negative results, attempts have been made to transfer primary atypical pneumonia in man. Vance, Scott and Mason⁸ failed to establish the infection in 7 volunteers inoculated intranasally with filtered pooled sputum and nasal washings.

From the Respiratory Diseases Commission Laboratory, Regional Hospital, Section 2, Fort Bragg, North Carolina.

This investigation was supported through the Commission on Acute Respiratory Diseases, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, Preventive Medicine Service, Office of the Surgeon General, United States Army, and by grants from the Commonwealth Fund, the W. K. Kellogg Foundation, the John and Mary R. Markle Foundation and the International Health Division of the Rockefeller Foundation to the Board for the Investigation and Control of Influenza and Other Epidemic Diseases for the Commission on Acute Respiratory Diseases.

Members and professional associates of the Commission on Acute Respiratory Diseases are John H. Dingle, Major, M. C., A. U. S., Director; Theodore J. Abernethy, Major, M. C., A. U. S.; George F. Badger, Captain, M. C., A. U. S.; Joseph W. Beard, M.D.; Norman L. Cressy, Major, M. C., A. U. S.; A. E. Feller, M.D.; Irving Gordon, M.D.; Alexander D. Langmuir, Captain, M. C., A. U. S.; Charles H. Rammelkamp, M.D.; Elias Strauss, Captain, M. C., A. U. S., and Hugh Tatlock, 1st Lieutenant, M. C., A. U. S.

The Commission was assisted by the technical staff of the laboratory: Pfc Alexander Adler, Ruth Chase, T/5 D. G. Foltz, Corp. M. H. Kaplan, Elizabeth Krakauer, T/5 G. J. Leuty, Dorothy Mickie, Second Lieutenant W. A. Mickle, Sn. C., Josephine P. Neely, Barbara A. Mulliken, First Lieutenant T. J. Oliver, Sn. C., First Lieutenant R. L. Robinson, Sn. C., and Irene Salamandra.

These studies were made possible by the cooperation of the administrative staffs of Selective Service, Camp Operations Division, and the National Service Board for Religious Objectors, the American Friends Service Committee, Brethren Service Committee and the Mennonite Central Committee. Cooperation and assistance were given by Brig. Gen. H. C. Coburn Jr., M. C., Col. J. C. Williams, M. C., Col. R. C. Tatum, M. C., Lieut. Col. W. B. Daniels, M. C., Lieut. Col. F. K. Herpel, M. C., Lieut. Col. F. J. Poffe, M. C., Lieut. Col. A. Blumberg, M. C., Capt. D. G. Walker, M. C., Capt. Michael Levin, M. C., and Capt. B. L. Heffner, M. C.

First Lieut. Clare B. Kwash, A. N. C., Second Lieut. Catharine E. Hammond, A. N. C., and Mrs. Catherine Kruse rendered invaluable service as nurses. T/4 Albert Aan gave material assistance as x-ray technician. Mr. O. E. Stone acted as assistant director of the C. P. S. unit throughout the course of the experiments. Messrs. J. H. Burrows, R. F. Landis, M. H. Leffel, D. H. McBee, W. M. McMillan, D. W. Mott, P. S. Olmsted, Edward Outland and T. F. White voluntarily served as attendants.

The members of the Commission are grateful to the volunteers themselves, without whom these experiments would have been impossible. 1. Dingle, J. H.; Abernethy, T. J.; Badger, G. F.; Buddingh, G. J.; Feller, A. E.; Langmuir, A. D.; Rueggesser, J. M., and Wood, W. B., Jr.: Primary Atypical Pneumonia, Etiology Unknown, *Am. J. Hyg.* 39: 67-128 (Jan.), 197-268 (March), 269-336 (May) 1944. Weir,

(Footnotes continued in next column)

Our purpose in this communication is to report the successful transmission of primary atypical pneumonia to human volunteers by means of bacteria-free filtrates. Previous experiments⁹ had indicated that this syndrome could be produced in certain individuals by inoculation with unfiltered throat washings and sputums.

MATERIALS AND METHODS

Forty-two conscientious objectors, all of whom had volunteered for the experiment, were segregated in individual rooms of a hotel. Eighteen men were housed on the third floor and 24 on the second floor; the latter were separated geographically into two groups of 12 each by temporary partitions in the hallways.

Clinical, roentgenographic and laboratory examinations served to eliminate any individuals with acute or chronic, organic or infectious diseases. Rigid quarantine was maintained during the eight week course of the experiment in order to prevent chance exposure to atypical pneumonia through outside contact. Strict isolation technics were instituted and maintained by the attending staff. Food was prepared in a common kitchen and distributed on individual compartment trays. The volunteers were observed for symptoms and signs of respiratory disease on alternate days before inoculation and daily after inoculation. Frequent roentgenograms were taken. Determination of the total leukocyte and differential counts and of the erythrocyte sedimentation rate (Rourke-Ernstene method)¹⁰ were performed repeatedly. Throat cultures were taken weekly before and after inoculation. Specimens of serum were collected for serologic study at weekly intervals.

The inoculum consisted of throat washings and sputum collected from 6 cases of atypical pneumonia produced in a previous experiment by inoculation of untreated and filtered throat washings and sputums from cases in a military hospital. Each of the experimentally

J. M., and Horsfall, F. L., Jr.: The Recovery from Patients with Acute Pneumonitis of a Virus Causing Pneumonia in the Mongoose, *J. Exper. Med.* 72: 595-610, 1940. Eaton, M. D.; Beck, M. D., and Pearson, H. E.: A Virus from Cases of Atypical Pneumonia: Relation to the Viruses of Meningopneumonitis and Psittacosis, *ibid.* 73: 641-654, 1941. Eaton, M. D.; Meiklejohn, G., and van Herick, W.: Studies on the Etiology of Primary Atypical Pneumonia: A Filtrable Agent Transmissible to Cotton Rats, Hamsters and Chick Embryos, *ibid.* 79: 649-668, 1944. Horsfall, F. L., Jr.; Curnen, E. C.; Mirick, G. S.; Thomas, L., and Ziegler, J. E., Jr.: A Virus from Patients with Primary Atypical Pneumonia, *Science* 97: 289-291 (March 26) 1943. Finland and Dingle,²

2. Finland, M., and Dingle, J. H.: Virus Pneumonias: 1. Pneumonias Associated with Known Nonbacterial Agents: Influenza, Psittacosis and Q Fever, *New England J. Med.* 227: 342-350 (Aug. 27) 1942. Dingle, J. H., and Finland, M.: 11. Primary Atypical Pneumonias of Unknown Etiology, *ibid.* 227: 378-385 (Sept. 3) 1942. MacLeod, C. M.: Primary Atypical Pneumonia, *M. Clin. North America* 27: 670-686 (May) 1943.

3. Hornibrook, J. W., and Nelson, K. R.: An Institutional Outbreak of Primary Atypical Pneumonia, *J. Epidemiological and Clinical Studies, Pub. Health* 1: 1-10, 1940. Dyer, R. E.; Topping, N. H., and Bengston, I. A.: An Outbreak of Pneumonitis: II. Isolation and Characterization of the Agent, *ibid.* 53: 1945-1954, 1940.

4. Smith, L. L.: Coccidioidomycosis, *M. Clin. North America* 27: 790-807 (May) 1943.

5. Meyer, K. F.; Eddie, B., and Yanamura, H. Y.: Ornithosis (Psittacosis) in Pigeons and Its Relation to Human Pneumonitis, *Proc. Soc. Exper. Biol. & Med.* 46: 609-615, 1942. Smadel, J. E.: Atypical Pneumonia and Psittacosis, *J. Clin. Investigation* 22: 57-65, 1943.

6. Blake, F. G.; Howard, M. E., and Tatlock, H.: Feline Virus Pneumonia and Its Possible Relation to Some Cases of Primary Atypical Pneumonia in Man, *Yale J. Biol. & Med.* 15: 139-166 (Dec.) 1942. Baker, J. A.: A Virus Obtained from a Pneumonia of Cats and Its Possible Relation to the Cause of Atypical Pneumonia in Man, *Science* 96: 475-476 (Nov. 20) 1942. Weir and Horsfall,¹ Eaton, Meiklejohn and van Herick.³

7. Commission on Acute Respiratory Diseases: The Present Status of the Etiology of Primary Atypical Pneumonia, *Bull. New York Acad. Med.*, to be published. Commission on Acute Respiratory Diseases in Collaboration with Danmin, G. J., and Weller, T. H.: Attempts to Transmit Primary Atypical Pneumonia and Other Respiratory Tract Infections to the Mongoose, *J. Immunology*, to be published.

8. Vance, D. H.; Scott, T., and Mason, H. C.: Inability to Pass Primary Atypical Pneumonia to Human Volunteers, *Science* 98: 412-413 (Nov. 5) 1943.

9. Commission on Acute Respiratory Diseases: An Experimental Attempt to Transmit Primary Atypical Pneumonia in Human Volunteers, *J. Clin. Investigation*, to be published; The Present Status of the Etiology of Primary Atypical Pneumonia.⁷

10. Rourke, M. D., and Ernstene, A. C.: A Method for Correcting the Erythrocyte Sedimentation Rate for Variations in the Cell Volume Percentage of Blood, *J. Clin. Investigation* 8: 545-559 (June) 1930.

produced illnesses had the characteristic of primary atypical pneumonia. During the course of their disease, all of the donors developed cold agglutinins to group O human red cells. The throat washings and sputums were pooled in proportion of 1 part of sputum to 5 parts of throat washings. Approximately one third of this pooled material was filtered through sintered glass and Seitz filters, another third was autoclaved at 15 pounds pres-

tion by means of an atomizer and vaporizer.¹¹ A tank of nitrogen was used as a source of pressure to vaporize approximately half of the inoculum given each man.

RESULTS

In the accompanying table are summarized the number and character of illnesses resulting from the various types of inoculum. Three patients receiving filtered

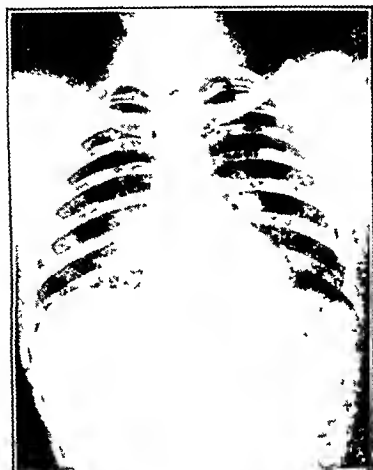


Fig. 1 (case 146).—Appearance of lungs, September 14.

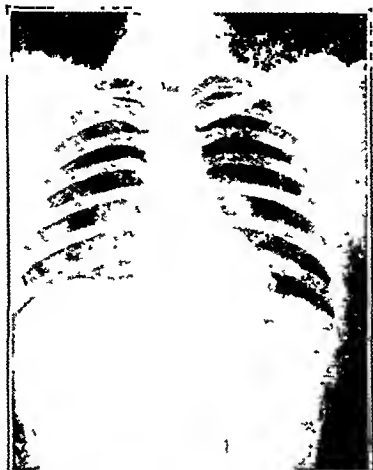


Fig. 2 (case 146).—Appearance of lungs, September 16.



Fig. 3 (case 146).—Appearance of lungs, September 30.

sure for ten minutes and the remainder was untreated. Aerobic and anaerobic cultures of the filtered and autoclaved material were sterile. Culture of the untreated material showed the following organisms: alpha, alpha and gamma streptococci, *Staphylococcus aureus*, diphtheroids and gram-negative cocci (not further identified).

inoculum (group B) and 3 receiving untreated material (group C) developed characteristic symptoms, signs and roentgenologic evidence of primary atypical pneumonia. No individual inoculated with autoclaved material (group A) was similarly affected.

Onset of disease in 3 patients in group B (filtered) occurred on the twelfth, thirteenth and fourteenth days



Fig. 4 (case 137).—Appearance of lungs, September 22.

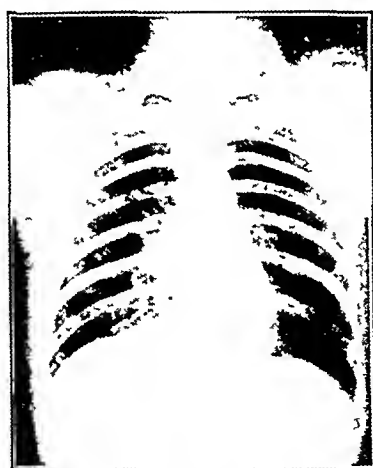


Fig. 5 (case 137).—Appearance of lungs, September 25.

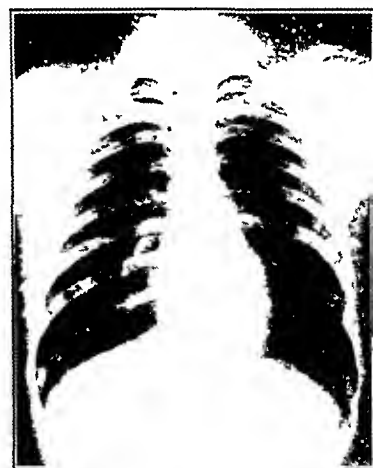


Fig. 6 (case 137).—Appearance of lungs, October 4.

Inoculations of autoclaved material were given to the first group of 18 volunteers (group A) after three weeks of isolation. Four days later a second group of 12 men (group B) were inoculated with filtered material. The final group of volunteers (group C) received untreated inoculum after a further interval of eight days. The inoculations were given outdoors. Each volunteer received a total inoculum of 10 cc. administered in three equally divided doses. The material was sprayed into the nose and throat in synchronization with deep inspira-

respectively after inoculation. Onsets occurred earlier in the 3 patients receiving untreated material (group C); 2 developed on the seventh day and 1 on the eighth day after inoculation.

The symptoms and signs observed at onset and during the course of the disease did not differ materially in the two groups. In general, illnesses were milder in patients in the "filtered" group.

¹¹ Made by the Vaponefrin Company.

Roentgenographic lesions were characteristic of those seen in moderately severe cases of primary atypical pneumonia in military and civilian hospitals. In 3 individuals single lobes were involved, in 2 patients bilateral lesions were observed, and in 1 individual all five lobes were involved in association with a critical illness. The appearance, development and regression of the pneumonic lesions in patients from both the "filtered" and "untreated" groups bore a striking similarity to those seen in the naturally occurring disease.

Cold agglutinins for group O human erythrocytes developed in the serums of 5 of the 6 cases of pneumonia. In group B (filtered), maximum titers of 128, 1,024 and 1,024 were obtained respectively on the twenty-

Two case reports are included to illustrate the clinical features of atypical pneumonia observed in individuals inoculated with filtered and with untreated material:

CASE 146, Group B (figs. 1, 2, 3 and 7).—A white man aged 26 received an inoculum of filtered throat washings and sputum. Twelve days later the patient developed hoarseness and persistent cough productive of scanty amounts of sputum. The following day malaise, sneezing, nasal obstruction and discharge and substernal pain were noted. These symptoms increased in intensity. Between the fourteenth and eighteenth days a moderate febrile illness ensued, the temperature reaching a maximum of 102.8 F. Feverishness, headache, malaise, anorexia and weakness were the most prominent constitutional symptoms present during this period. The cough became more severe and was productive of large amounts of mucopurulent sputum. A roentgenogram of

the lungs on the seventeenth day showed bilateral pneumonic infiltration of the right hilus and left lower lobe. Subcrepitant inspiratory rales and rhonchi were first audible over the areas of infiltration on the nineteenth day and persisted until the thirty-first day after inoculation. Convalescence was uneventful, but minimal cough was still present on discharge.

No significant alteration of the white blood cell count or of the erythrocyte sedimentation rate occurred during the illness. Pneumococci types 6 and 21 were isolated from the patient's sputum; type 6 was repeatedly isolated from throat cultures prior to inoculation. Cold agglutinins in a titer of 1,024 were detected in a sample of the patient's serum on the twentieth day after inoculation.

CASE 137, Group C (figs. 4, 5, 6 and 8).—A man aged 20 was inoculated with untreated throat washings and sputum. Prodromal symptoms of illness began five days after inoculation with the development of sore throat. During the next forty-eight hours the patient noted dry cough, substernal pain and fever. Other symptoms of illness became apparent on the eighth day with the occurrence of chilliness, feverishness, headache, malaise and anorexia. The temperature rose to 102 F. and physical examination disclosed coarse rales at the right lung base. A roentgenogram of the chest (postero-anterior view only) was negative. On the ninth day frontal headache and cough became severe and the temperature rose to 104.4 F. Fine subcrepitant rales and rhonchi were detected over the right lung base. The diagnosis of atypical pneumonia was confirmed by a roentgenogram which showed minimal infiltration (right oblique view). The clinical course was subsequently severe and marked by cyanosis, tachypnea, tachycardia and cough. Oxygen therapy was given with benefit for eight days. The pneumonic infiltration spread to include all five lobes. On the fifteenth day clinical signs of improvement were apparent for the first time, and thereafter convalescence proceeded uneventfully.

Laboratory studies revealed no elevation of the leukocyte counts. There was a rise in the erythrocyte sedimentation rate to 0.7 mm. per minute on the twenty-first day after inoculation, thirteen days after onset. Cold agglutinins were demonstrated in a titer of 8,192 in a sample of serum taken on the twenty-sixth day after inoculation.

In addition to the 6 cases of atypical pneumonia there were 11 cases of minor respiratory illness (as shown in the table) distributed as follows: group A (autoclaved)

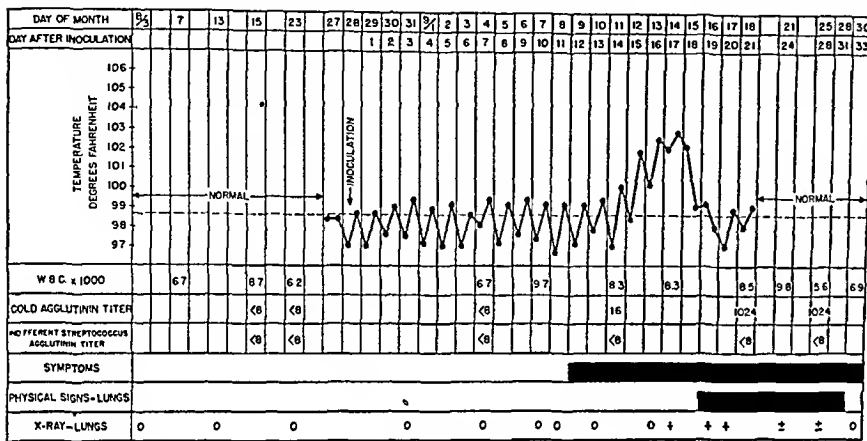


Fig. 7 (case 146).—Clinical course of patient given filtered inoculum.

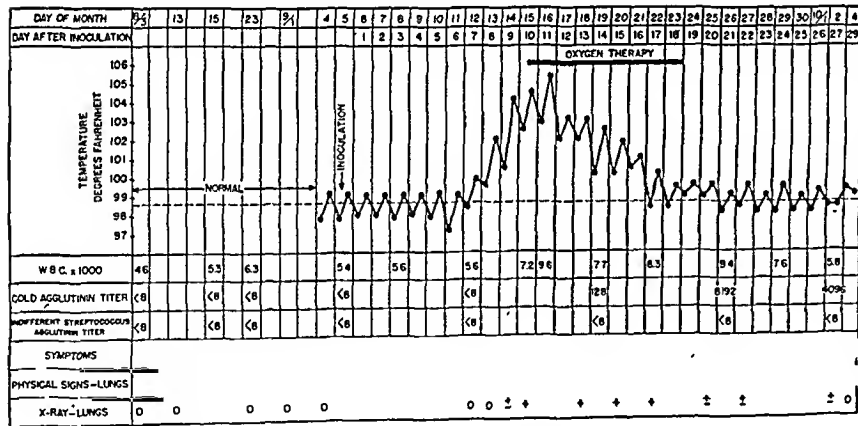


Fig. 8 (case 137).—Clinical course of patient given untreated inoculum.

seventh, twenty-seventh and twentieth days following inoculation. Two patients in group C (untreated) developed maximum titers of 512 and 8,192 on the twenty-first and twenty-sixth days respectively after inoculation. A third patient did not develop cold agglutinins at any time.

A rise in titer of agglutinins for an indifferent streptococcus (Rockefeller number 344)¹² was not demonstrated in the serums of any of the 6 patients with pneumonia.

Cultures of the throat, sputums and throat washings yielded no indication of a direct etiologic relationship between any single organism or group of organisms and atypical pneumonia.

12. Thomas, L.; Mirick, G. S.; Curnen, E. C.; Ziegler, J. E., Jr., and Horsfall, F. L., Jr.: Serological Reactions with an Indifferent Streptococcus in Primary Atypical Pneumonia, *Science* 98: 566-568 (Dec. 24) 1943.

1 case, group B (filtered) 5 cases, group C (untreated) 5 cases. The illness in group A was the only instance of respiratory infection occurring in any member of the autoclaved group. He was the only volunteer, as far as could be determined, who broke isolation; on at least one occasion he descended a fire escape to converse with a member of another group who subsequently developed "suspected atypical pneumonia."

The development of these minor respiratory illnesses in 10 persons receiving filtered and untreated inoculum occurred between the first and fifteenth days of inoculation. The symptoms, physical signs, course and severity of these infections were variable. Seven illnesses were afebrile and extremely mild, with minimal symptoms and signs. Three illnesses were more severe, characterized by fever, moderate symptoms and physical signs of respiratory disease. These cases were diagnosed as "suspected atypical pneumonia" or "bronchitis resembling atypical pneumonia" because the clinical course of illness was that of atypical pneumonia, although without roentgenographic evidence of pulmonary infiltration. A complete discussion of these cases of minor respiratory illness will be made in the final report of these experiments.

Characteristics of Illness Noted in Human Volunteers Inoculated with Autoclaved, Filtered and Untreated Sputums and Throat Washings from Patients with Atypical Pneumonia

Group	Type of Inoculum	No. of Men	Result		
			Primary Atypical Pneumonia	Minor Respiratory Illness	No Illness
A	Autoclaved	18	0	1	17
B	Filtered	12	3	5	4
C	Untreated	12	3	5	4
Total.....		42	6	11	25

SUMMARY AND CONCLUSIONS

Human volunteers have been inoculated with a pool of sputum and throat washings obtained from experimentally produced cases of atypical pneumonia. Respiratory illnesses having all of the characteristic features of primary atypical pneumonia developed in 3 of 12 men receiving filtered inoculum. Similarly, 3 instances of pneumonia occurred among 12 individuals inoculated with untreated material from the same source. The infection was thus carried through two successive groups of well persons. No cases of pneumonia developed in any of the 18 men who received autoclaved inoculum.

The incubation period in the experimental disease differed with the type of inoculum. Persons receiving filtered material developed symptoms of disease between twelve and fourteen days after inoculation. The onset of illness in those inoculated with untreated material was approximately one week earlier.

The results of this experiment thus demonstrate that bacteria-free filtrates, presumably containing a virus, can induce primary atypical pneumonia in man.

INJURIES OF THE CERVICAL SPINE

ARTHUR G. DAVIS, M.D.

ERIE, PA.

Starting with the fact that the great majority of injuries of the cervical spine are in the nature of a "whip lash," and accepting the meaning of the term "whip lash" as a hyperflexion followed by spontaneous extensor recoil, the nature of a great variety of injuries of this section of the spinal column becomes understandable. The extreme mobility of the cervical spine, its known potential for pure dislocation unaccompanied by fracture and its wide anatomic departure from other sections of the spinal column seem to have made specific diagnosis of lesions in this section difficult. A number of important accretions of anatomic interpretation, diagnostic technic and therapy have occurred quite recently. Correlation of these new facts has served to clarify both the diagnosis and the treatment as well as to improve the prognosis.

TYPES OF INJURIES

Two degrees of injury are immediately separated by the severity of the accident. For convenience these will be referred to as "obvious" and "obscure." The common automobile street accident, falls from a height, diving accidents and blows striking the head sufficient to cause immediate disability and emergency rescue produce the usual obvious case. When paralytic signs or gross lesions immediately "obvious" in the x-ray film or both are present, the diagnostic problem is a simple one.

The "obscure" lesions are those confronting the physician, with pain and spasm in the neck, variable pain radiation with gradations from those of trivial annoyance to those exhibiting intractable causalgia. The question of injury, whether recent or remote, is frequently slurred over by the patient for the reason that painful symptoms do not develop until some time after, a good many times years after, the injury occurs. Special questioning on this point usually brings out the history of a definite injury days, months or years prior to the onset of disabling symptoms. The patient interprets the original fleeting symptoms as a "sprain" not worthy of medical attention. As is true in the case of the ankle, the knee, the wrist or the shoulder, the word sprain indicates a partial or complete ligamentous avulsion. When such ligamentous avulsions in other parts of the body are neglected the healing process is incomplete, leaving an elongated, weakened structure which with ordinary use continues to stretch. The cervical spine is no exception; in fact, its extreme mobility renders it peculiarly susceptible to such progressive elongations with the secondary involvement of the other components of the intervertebral joint.

FUNCTIONAL AND MORBID ANATOMY

Since the accidental force carries the weight of the head beyond the normal range of motion, knowledge of the normal limits is important. For this purpose a study of normals of different types was made (fig. 1). Nine members of the hospital staff, including both sexes from the teens to the sixth decade, of mixed slender,

Blood Transfusion in the Middle Ages.—In the Middle Ages, blood transfusion was considered a therapeutic measure to restore health. It is related that Pope Innocent VIII, in the year 1490, lay dying from that "terrible disease extreme old age," and as a last resort a transfusion from three donors was attempted in 1491, which resulted in the death of the donors without saving the Pope. Needless to say, the daring physician had to flee for his life.—Gordon, Benjamin Lee: *The Romance of Medicine*, Philadelphia, F. A. Davis Company, 1944.

stocky, short and tall types, were studied. Three attitudes were posed, in the sitting position, recording only the lateral projection at 72 inches (fig. 2):

Position 1. Relaxed—the gaze focused on a point level with the eye

Position 2. "Chin chest" position—head pushed forward to approximate the chin as near to the chest as possible in order to obtain maximum range of neck flexion

Position 3 The limit of extension

When the first lateral projection of a cervical spine shows elimination of the normal forward curvature, it must be assumed that some kind of mechanical derangement has taken place, since this is just as abnormal a finding as is bowing in the tibia

dislocating vertebra. This border then impinges on the border of the subjacent vertebra as the articular processes of the dislocating body mount the processes of the subjacent one (fig. 5).

A further continuation of the same extreme hyperflexion mechanism is indicated in figure 9, in which the dislocation is complete and the articular processes are locked.

This paper represents an analysis of 134 cases of injury to the cervical spine encountered during the last twenty-two years and treated either by myself or by my associate, Dr. C. W. Fortune. Of these 73 were of the ambulatory type and the patients came to the office for treatment. The remaining 61 were of the

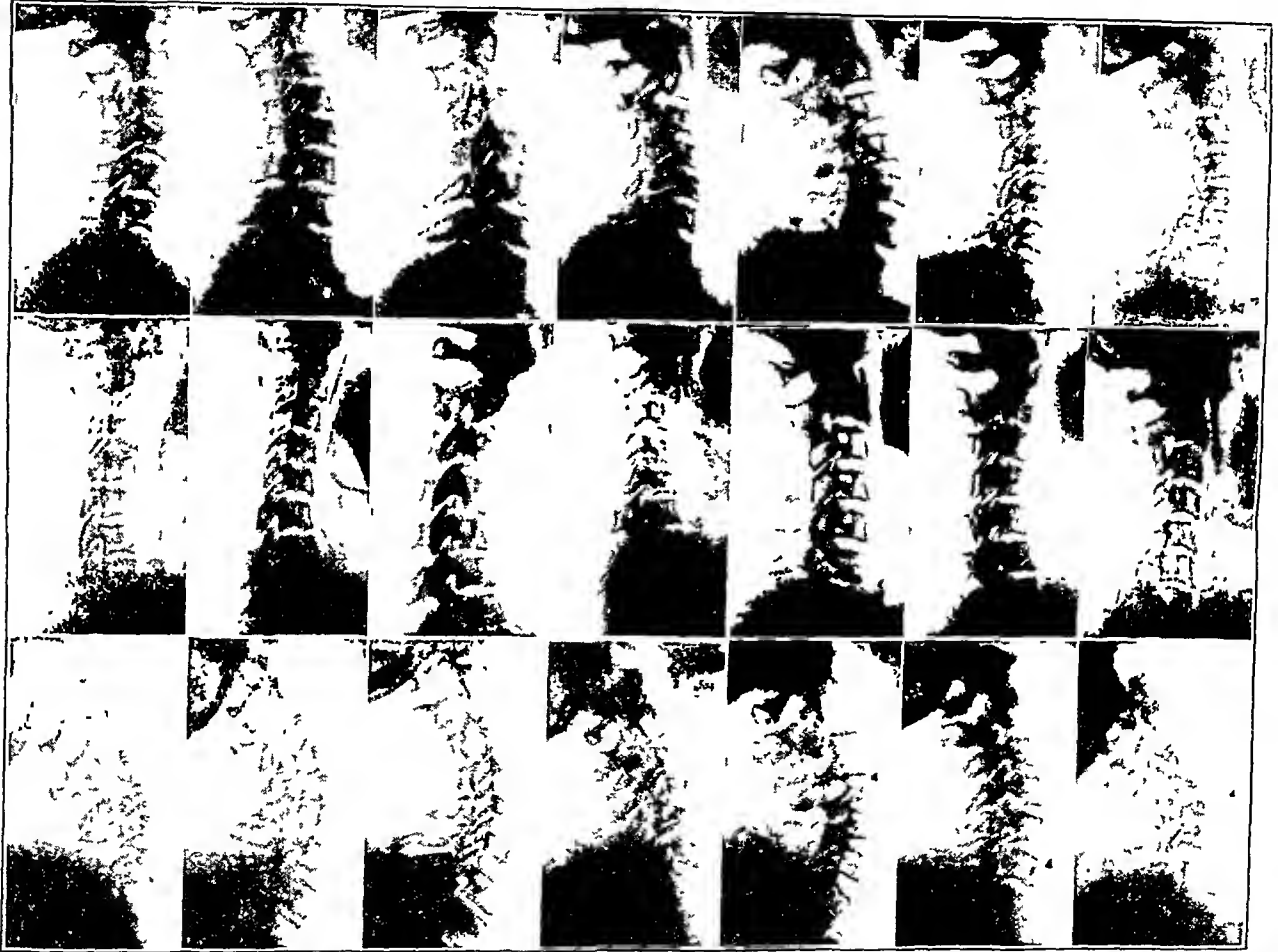


Fig 1—Normal standards of neutral, flexion and extension positions just mentioned shows how universally the anterior normal curvature of the cervical spine may be expected regardless of sex, age or statural type. The second row shows what may be expected in extreme flexion passively assisted by pressing the head forward on the chest. For the purpose of a composite picture these second row figures were rotated to the vertical. A straight line joining the posterior borders of the bodies of the first and seventh cervical vertebrae illustrated in figure 3 shows the amount of curvature. The third row shows how uniform extension is regardless of type

Figure 3 illustrates the localization possible by taking a lateral view in the "chin chest" position.

A four weeks old injury with complaint of pain and spasm in the neck region with radiation down the arm is shown in figure 4.

As increasing degrees of the hyperflexion force are encountered, not only are the fibers of the capsule of the articular process ruptured but also the posterior common ligament with presumably some fibers of the annulus fibrosus. When this occurs, the pivot of motion is no longer at the juncture of the pedicle and body but shifts forward to the anterior lower border of the

"obvious" emergency type and represent admissions by ambulance to the hospital. Prior to the year 1936 elimination of the normal forward curvature was not noted. Reviewing the films in these cases, it was found that 16 of the 41 showed straightness of the entire cervical spine. Since 1936 11 out of the remaining 32 were noted as showing elimination of the cervical curvature. In 17 of these 27 cases opinions were rendered to insurance carriers or the patients themselves and it is clear that prior to 1936 the opinion was in error for the obvious reason that the significance of straightness of the cervical spine was not appreciated.

"OBSCURE TYPE"

An analysis of the 73 cases in the "obscure" neurologic group shows that the automobile head-on collision is the most prolific cause. The velocity of the car is also the velocity of the individual and his parts. Ordinarily the torso and the legs are braced at the moment of impact of the head-on collision. The extreme mobility of the cervical section of the spine permits the weight of the head to continue its forward momentum after the moment of impact. The degree of hyperflexion "whip lash" is directly proportional to the speed at the moment of collision. Any degree of injury must therefore be anticipated, from slight strain involving the tearing of a few fibers of the posterior articular ligaments, disk injuries and complete dislocations to fatal cases in which the cord is severed. It is the lesser degrees of injury which have eluded specific diagnosis. Immediately following such an accident the elastic extensor recoil mechanism provided by the static posterior cervical musculature and the ligamentum flavum is the mechanism which serves to conceal the damage which has occurred, since it effects a variable degree of reduction spontaneously. Spasm of the cervical musculature serves to avoid painful contact of the injured part; therefore the facets are not restored to their normal apposition. The entire cervical spine is held slightly forward to avoid such painful contact of the posterior articular processes. The elimination of the normal forward curvature thus produced provides the clue to the damage concealed by the spasm. If such cases are seen immediately afterward and the lateral projection shows a straight cervical spine, obviously a picture should be taken in the "chin chest" position. A great many of such cases, however, have but fleeting symptoms which disappear in a few days and the individual resumes the normal use of his head and neck. In exactly the same manner as a neglected ankle sprain, such torn ligaments heal in the long position. Normal use thereafter continues to stretch the ligaments, accounting for the increasing disabling symptoms occurring from three months to years afterward. Such neglected cases result in pain in the cervical region with variable pain radiation.

Analyzing the 73 cases from the point of view of their pain radiation, seven different syndromes become recognizable:

1. The occipital syndrome.
2. The third and fourth cervical root syndrome.
3. The fifth cervical root syndrome
4. The sixth cervical root syndrome.
5. The seventh cervical root syndrome
6. The precordial syndrome
7. The syndrome of the long thoracic nerve

In referring to the root numbers it will be remembered that the number of the root corresponds with the space above the vertebra of the same number. The occipital syndrome associated with lesions of the axis or atlas is recognized by pain radiating up one or both sides of the occipital region together with limitation in

nodding, rotation and tilting of the head or wry neck. The third and fourth cervical root syndrome is associated with muscle spasm and pain along one or the other lateral angles of the neck. In the fifth cervical root syndrome the pain radiates over the shoulder region, in the sixth to the radial side of the hand and in the seventh to the radial side of the hand, including the index and in some cases the middle finger. The syndrome of the long thoracic nerve has been seen twice in this series; both cases showed "winged" scapula,

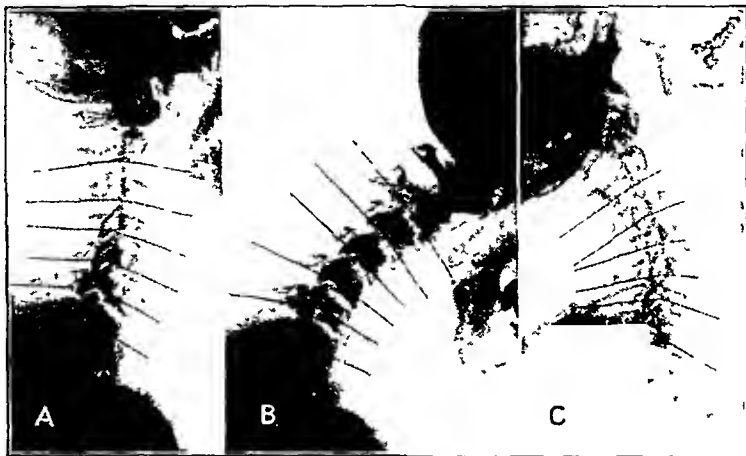


Fig. 2—Functional anatomy. For this purpose arbitrary points were selected on each vertebra and lines extended to visualize the movement. A is in relaxation with the eyes horizontal, position 1. Note that the posterior lines are nearly parallel, evenly spaced and horizontal (in balance). B shows the "chin chest" position, and the degree of deviation of the lines is variable. The sixth and seventh remain nearly horizontal. The greatest range is seen between the fourth and the sixth. Note that in C the convergence of the posterior lines is maximal between the third and the sixth. In terms of the "whip lash" mechanism, it will be seen that the sixth and seventh form the stock of the whip and the upper vertebrae the lash. The movement indicated by the anterior lines is best explained by the movement involved in the shift of the nucleus pulposus, the approximation of the anterior edges of the vertebrae in B being consistent with the convergence of the lines, just as the divergence of the lines in C is accompanied by an approximation of the posterior edges of the body.

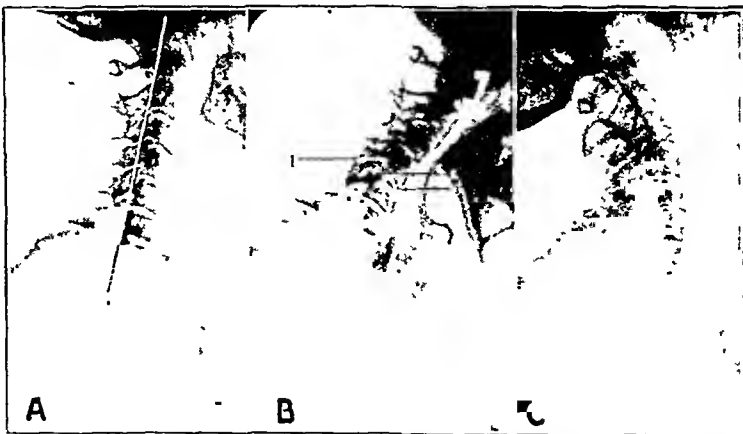


Fig. 3—Localization of lesion. Four years before, the patient sustained an electrical shock. During the effort to withdraw his hand from contact with wires, a severe "throw" of the head occurred. He experiences occasional pain and stiffness in the neck with shoulder radiation, which he relieves posturally. Note the straightness of the spine in A also forward tilting of the body as measured by the posterior border of the fourth. B 1 shows the excursion of the posterior edge of the subjacent articular process from the subjacent one. B 2 shows the separation of the posterior edges of the body and the shifting of the nucleus to account for this spread. B 3 shows the approximation of the anterior edges, and C shows how hyperextension restores all normal relationships.

complete paralysis of the serratus anterior and roentgenographic evidence of injury at the seventh cervical level. Horner's syndrome was not observed in any case in this series.

In the case of disk protrusion, the signs are considerably more definite than in the case of pure luxation

without protrusion. In the 2 instances, however, they cover the same areas. Mixter and Barr,¹ McKenzie,² Oppenheimer,³ Semmes and Murphey,⁴ Spurling,⁵ Stookey⁶ and Stuck⁷ have all pointed to syndromes associated with disk protrusion showing sharply deline-

to the number of the nerve root. Figure 7 shows involvement of the fourth nerve root. Figure 8 illustrates a typical case of sixth root radiation.

DIFFERENTIAL DIAGNOSIS

With the clue to mechanical derangement established by the fact that the cervical spine exhibits a straight line in the lateral projection, differential diagnosis depends on a proper correlation of x-ray appearances with nerve root radiation. Semmes,¹ Spurling⁵ and Oppenheimer⁸ have noted straightness of the cervical spine in disk lesions. Watson-Jones¹⁰ also makes note of straightness as an incident in "sprain" of the cervical spine. Oppenheimer⁸ notes lesions of the articular processes and encroachment on the intervertebral foramina due to spurs surrounding the intervertebral disk. The scalenus syndrome has been mentioned.¹¹ This obviously is not associated with straightness of the cervical spine. Pure muscle ruptures are not ordinarily painful beyond the first two weeks.

A specific diagnosis, therefore, rests on the correlation of positive x-ray findings corresponding to a definite level of root radiation as described. Spurling⁵ has shown that disk protrusions can be visualized with pantopaque. He also finds that compression downward of the head on the side of involvement produces pain in one of the root areas mentioned. Careful roentgenography in the sitting relaxed position with the eyes horizontal and the "chin chest" position and bilateral oblique films to show the intervertebral foramina will frequently reveal a lesion of one or other of three kinds:

1. Luxation of the posterior facets.
2. Narrowing of the intervertebral space.
3. Lesions encroaching on the intervertebral foramen.
4. Combinations of any two or all.



Fig. 4.—One month old luxation injury. The separation of the posterior margins of the articular processes between the fifth and sixth vertebrae is easily demonstrated with flexion (compare 2 with 1). The wide separation as indicated in 4 as compared with 3, confirms this conclusion. The patient complained of pain over both shoulders, which disappeared with the hyperextension collar.

ated areas of sensory and motor change. Semmes,⁴ Oppenheimer⁸ and Nachlas⁹ point to the association of precordial pain with sensory changes involving the radial side of the hand, while in other contributions reference is not made to the precordial pain of an anginoid type.

It is important to eliminate the scalenus syndrome in all chronic cases involving pain radiation to the hand. Figure 4 illustrates the areas involved according



Fig. 5.—Disk lesion associated with fracture. Note the anterior projecting fragment of the seventh cervical as well as the contacting exostoses of the posterior edges of the sixth and seventh cervical, the narrowing of the intervertebral space, also that no change is noted in the posterior articulations. Pain of a causalgia type radiated to the finger tips of the right hand. There was also paralysis of the serratus anterior.

"OBVIOUS" LESIONS

No attempt will be made to outline specifically diagnosis and treatment of the frank outspoken fracture dislocations with or without paralysis for which imme-

1. Mixter, W. J., and Barr, J. S.: Rupture of Intervertebral Disk with Involvement of Spinal Canal, *New England J. Med.* **211**: 210-215 (Aug. 2) 1934.
2. McKenzie, K. G., and Botterell, E. H.: Common Neurological Syndromes Produced by Pressure from Extrusion of Intervertebral Disc, *Canad. M. A. J.* **46**: 424-435 (May) 1942.
3. Oppenheimer, A., and Turner, E. L.: Discogenetic Disease of the Cervical Spine with Segmental Neuritis, *Am. J. Roentgenol.* **37**: 484-493 (April) 1937.
4. Semmes, R. E., and Murphey, F.: Syndrome of Unilateral Rupture of the Sixth Cervical Intervertebral Disk, *J. A. M. A.* **121**: 1209-1214 (April 10) 1943.
5. Spurling, R. G., and Scoville, W. B.: Lateral Rupture of the Cervical Intervertebral Disks, *Surg., Gynec. & Obst.* **78**: 350-358 (April) 1944.
6. Stookey, B.: Compression of Spinal Cord and Nerve Roots by Herniation of Nucleus Pulposus in the Cervical Region, *Arch. Surg.* **40**: 417-432 (March) 1940.
7. Stuck, R. M.: Spinal Cord Compression Injuries, *J. Kansas M. Soc.* **40**: 48-52 (Feb.) 1939.
8. Oppenheimer, A.: Longitudinal Fissures in the Vertebral Articular Processes, *J. Bone & Joint Surg.* **23**: 280-282 (April) 1941; Pathology, Clinical Manifestations and Treatment of Lesions of the Intervertebral Disks, *New England J. Med.* **230**: 95-105 (Jan. 27) 1944.
9. Nachlas, I. W.: Pseudoangina Pectoris Originating in the Cervical Spine, *J. A. M. A.* **103**: 323-325 (Aug. 4) 1934.
10. Watson-Jones, R.: Fractures and Other Bone and Joint Injuries, Baltimore, Williams & Wilkins Company, 1939.
11. Brown, L. D., and Kuhns, J. G.: Extension Deformities of the Cervical Spine, *J. Bone & Joint Surg.* **24**: 329-340 (April) 1942.

diate definitive treatment is indicated except to state rules of procedure in the handling of such cases. Here also recent acquisitions in several departments have resulted in revisions of approach, diagnosis and treatment.



Fig. 6—A case of typical fourth root radiation. In this case the injury was twenty years old. Note the straightness in A and luxation of the third forward on the fourth. The patient was tracted by a bed halter for several days, with complete disappearance of symptoms. B shows the fusion of the third, fourth and fifth spinous processes. This patient was completely relieved from painful symptoms and has comfortable motion of the head and neck.

1. Hyperextension is as generally applied in the reduction of fractures of the spinal column as is straight line traction in the reduction of fractures in long bones.

2. The anterior longitudinal ligament when interpreted correctly acts as the main reducing medium as well as the main check strap opposed to excessive hyperextension.

3. Laminectomy as a decompressive procedure occupies a distinctly secondary place to that of hyperextension.

4. Determination of spinal subarachnoid block by the Queckenstedt test is an invaluable test before and after hyperextension and as a criterion for laminectomy.

5. Skeletal traction by means of the Crutchfield tongs is much superior to any other method of traction and when used properly is completely sufficient for the reduction of fractures, dislocations and fracture dislocations.

The following routine is observed in the emergency service:

1. Medical responsibility begins at the site of the accident. The ambulance personnel is instructed to place the head in immediate hyperextension with a blanket roll or other material under the neck, and an attendant remains in charge of the head position throughout all transport directly to the hospital bed, never once allowing the head to be bent forward or lifted as for a drink of water.

2. When the patient has been transferred to the hospital bed a halter is applied to take over the hyperextension. Five pounds of weight is attached through a pulley, and the head of the bed is elevated.

3. Not until the patient is so established in hyperextension with traction is the preliminary x-ray survey

permitted. A lateral film is then taken and an anteroposterior film particularly to show the odontoid. An anteroposterior film otherwise is mostly a deception.

4. Meanwhile a neurologic examination is made. If there is no evidence of spinal cord involvement and the preliminary films are negative, the case is further investigated in the roentgenologic department at leisure with bilateral oblique films, the odontoid films being repeated if necessary and films taken in the sitting position, positions 1 and 2, as heretofore mentioned.

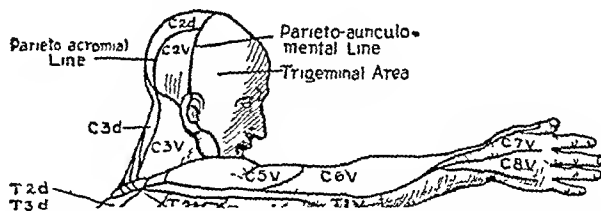


Fig. 7—Outline of areas commonly involved in cervical spine lesions. From Tilney, Frederick, and Riley, H. A.: *Form and Functions of the Central Nervous System*, ed. 2, figure 174, page 166, the somatic dermatomes (Dejerine), courtesy of Paul B. Hoeber, Inc., New York.

If the lateral projection in position 1 shows elimination of the normal forward curvature and all other evidence is negative, this in and of itself is sufficient to indicate the application of a hyperextension collar, to be worn without interruption for a minimum of three weeks, this period being the time of sound repair of



Fig. 8—Typical sixth nerve root radiation. Note narrowing between fifth and sixth cervical vertebrae, also exostoses of the posterior edges of the body. History is that of violent flexion ten years prior to advent of disabling symptoms. Is relieved by halter traction and by maintaining proper posture.

fibrous tissue. A great many cases of chronic disability involving both intervertebral disks and posterior spinal joints will thus be prevented.

OUTLINE OF DEFINITIVE TREATMENT

When the survey x-ray shows a gross lesion such as a crush fracture, unilateral or bilateral dislocation, fracture dislocation or fracture of the odontoid process:

1. Skeletal traction is almost invariably indicated.
2. If there are neurologic signs, skeletal traction also is indicated.
3. Provision should be made to raise or lower the pulley and weight traction and the amount changed to suit the case. Up to 45 pounds of weight has been used over a considerable period of time. However, 15 to 25 pounds with skeletal traction is ordinarily quite sufficient.
4. In cases of unilateral or bilateral dislocations or fracture dislocations, it is important to start traction

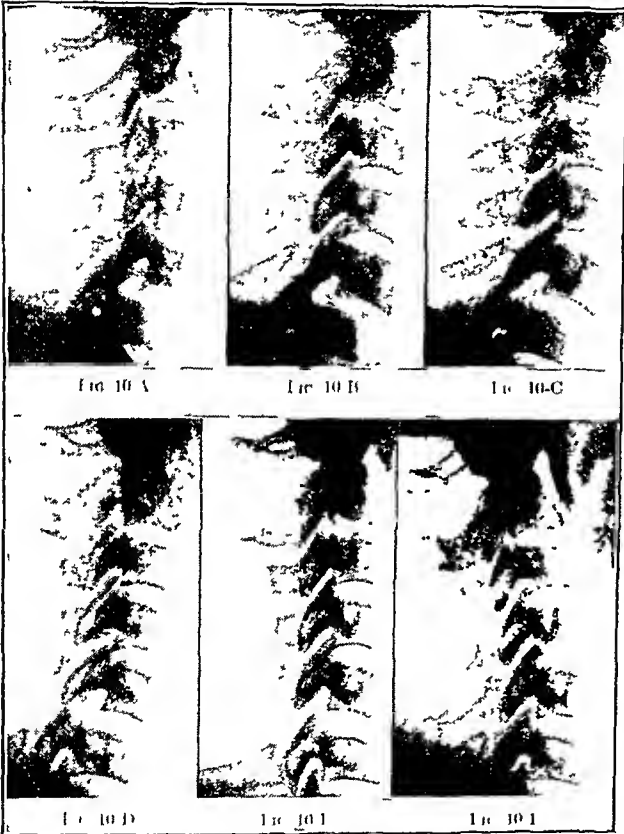


Fig. 9—Reduction with skeletal traction under roentgenographic control, reproduced from the *Journal of Bone and Joint Surgery* by courtesy of W. G. Turner. This method consists in gradual reduction by proper interpretation of the skeletal traction method. In cases of bilateral complete dislocations with or without subarachnoid block, skeletal traction is applied using 25 pounds pulling in line with the vertebra above the dislocation. Lateral films are taken at ten minute intervals, and it is found that after twenty minutes or more the processes are unlocked. At this time the head traction is lowered in order to induce hyperextension, thus replacing the jumped process. The traction is then reduced to 8 pounds or less. In the case cited the author states that the subarachnoid block was completely relieved. See footnote 13a.

in a straight line. Traction in flexion is dangerous because of avulsion of the posterior roots. Traction in extension is not effective because of the check strap effect of the anterior longitudinal ligament.¹² Straight line traction therefore under x-ray control, as much weight being used as is necessary to disengage the articular processes, is the rule. This procedure has been illustrated by Cone and Turner (fig. 9).¹³

12 Davis, A. G. Tensile Strength of the Anterior Longitudinal Ligament in Relation to the Treatment of 132 Crush Fractures of the Spine, *J. Bone & Joint Surg.* 20:429-438 (April) 1938.
13 Cone, W., and Turner, W. G. The Treatment of Fracture Dislocations of the Cervical Vertebrae by Skeletal Traction and Fusion, *J. Bone & Joint Surg.* 19:584-602 (July) 1937.

In the rare case in which dislocations are found irreducible by skeletal traction, one resorts to the Taylor¹⁴ or Walton¹⁵ technic. In spite of several attempts, some dislocations or fracture dislocations remain irreducible. Resort to operative approach such as that outlined by Rogers,¹⁶ is justifiable either for the removal of an obstructing articular process with fusion or simple fusion.

5. If there is nerve involvement or complete paralysis with a definite level, a Queckenstedt test should be made. Traction can be easily maintained and the position remain unchanged with such skeletal traction while the patient is turned on his side. If there is a complete block it is obviously important to attain complete restoration of the caliber of the spinal canal at the point of fracture or dislocation. Hyperextension, more than any other one factor, will bring this about. After a roentgenographic check has demonstrated full reduction or full hyperextension, another spinal tap is immediately done; if the block has been released, there is obviously no indication for laminectomy. If the pressure readings are still negative, laminectomy may be indicated. In spite of the well known futility of laminectomy in such cases, if laminectomy is to be done it should be done under local anesthesia and as quickly as possible. Allen¹⁷ has shown that spinal cord substance has the ability to recover from pressure up to five hours but that if pressure is continued longer the condition is irreversible.

When there is partial paralysis it is important to have repeated neurologic examinations at short intervals to determine progress or not of the lesion. In cases showing progressive paralysis or where the roentgenogram shows definitely the intraspinal projection of a bone fragment such as a fractured lamina, an emergency laminectomy is indicated. Clinical experience has shown that hyperextension is much more effective as a decompressor than is laminectomy. The projection of the posterior upper angle of the vertebral body into the spinal canal is the most frequent compressing medium. This deformation disappears with adequate hyperextension, releasing the block. Several cases showing an initial block have shown a restoration of pressure in the lumbar needle after hyperextension or manipulative reduction. Too often laminectomy proves to be an ante-mortem exploration and the cord is found pulped. A number of fatal cases in which complete reduction had been attained by hyperextension in which laminectomy was not done because of its apparent futility have shown pulped cords on necropsy. Prediction in any

13a. This method seems by far the safest and simplest of the manipulative procedures. It recognizes that pulling in a straight line is without danger because of the check strap effect of the anterior longitudinal ligament. It also recognizes that, once the facets are replaced, strong traction is contraindicated, so the traction is reduced to a negligible amount. It has been my practice that when such pure dislocations are properly reduced a plaster collar should be applied with the neck in hyperextension as soon as possible after the reduction has been accomplished. This is done in order to allow repair of the posterior ligaments in the short position, otherwise progressive luxation or recurrence of the dislocation may be experienced. There are numbers of cases on record in which this type of recurrence has been experienced. It is therefore important after the reduction has occurred not only to remove all traction but to immobilize the cervical spine in complete hyperextension in a rigid irremovable plaster collar for the necessary length of time for healing of the torn ligamentous tissues, which is from three to four weeks.

14 Taylor, A. S. Fracture Dislocation of the Neck. A Method of Treatment, *Arch. Neurol. & Psychiat.* 12:625-639 (Dec.) 1924; Fracture Dislocation of the Cervical Spine, *Ann. Surg.* 80:321-340 (Sept.) 1929.

15 Walton, G. L. A New Method of Reducing Dislocations of the Cervical Vertebrae, *J. Nerv. & Ment. Dis.* 20:609-611, 1893; Further Observations on Cervical Dislocations and Its Reduction, *Boston M. & S. J.* 149:445-447, 1903.

16 Rogers, W. A. Treatment of Fracture Dislocation of the Cervical Spine, *J. Bone & Joint Surg.* 24:245-258 (April) 1942.

17 Allen, A. R. Surgery of Experimental Lesion of Spinal Cord Equivalent to Crush Injury or Fracture Dislocation of the Spinal Column, *J. A. M. A.* 57:878-880 (Sept. 9) 1911.

case is impossible when the case of complete paralysis is first seen because of the fact that edema, contusion, hemorrhage and compression may temporarily produce complete signs and it is quite impossible to differentiate these entities.

6. Fractures of the first and second cervical vertebrae with the exception of fractures of the odontoid defy classification as to treatment. Fractures in these vertebrae, however, obey the general rule as regards the immediate application of the Crutchfield tongs, although they are frequently an exception to the rule of hyperextension. Experience has taught that the head may have to be lowered or raised, depending on the appearance of the odontoid in the lateral projection. As soon as the odontoid has become stable and the fragments have been correctly apposed, this position should be maintained either by the tongs or by a plaster collar, which may be fitted while the tongs are still in place. It is important to eliminate all motions in rotation, nodding or lateral tilting for several months.

7. Fractures or defects of the accessory processes call for individualized treatment, depending on the part involved. Both Oppenheimer⁸ and Mensor¹⁸ call attention to such defects. Clay shovelers' fracture involving the spinous processes at the cervicodorsal junction also claim attention as a separate clinical entity.¹⁹ None of these have been encountered in this series.

CONVALESCENCE

Here a single general rule may be said to cover the entire conduct of convalescence to the point of sound healing. Hyperextension is that rule. Nowhere is it more necessary to maintain complete hyperextension throughout convalescence than in the cervical spine. Whether the patient is recumbent or ambulatory, whether the condition is a unilateral or a bilateral dislocation or a compression fracture, whether a partial luxation or a suspected intervertebral disk lesion, whether the patient must look skyward or not to hold the extension, the rule holds. Removable braces are the least trustworthy, irremovable plaster casts the most dependable. In fashioning such plaster collars or Minerva jackets, the principal criterion is the separation of the jaw from the chest. A number of cases appear in the literature in which redislocations have occurred after complete reduction because of inadequate splintage. Recent ligamentous lesions should be protected for three to six weeks, complete dislocations for three months, compression fractures for three months, odontoid process fractures for three to five months. Where fracture dislocations are found to be irreducible and there are no paralytic signs, posterior fusion of two or three of the vertebrae in the involved region is quite sufficient to produce a fully functioning spine minus symptoms except for slight limitation of mobility.

PROGNOSIS

In the 61 hospital admissions for serious accidents there were eleven deaths. Autopsies, which were obtained in most of the fatal cases, showed irreparable pulpefaction of the cord. In the remainder of the serious injuries full recovery has occurred for the most part. Several patients showing complete signs of paralysis on entering the hospital have recovered complete or

nearly complete function without laminectomy. In the 134 cases of all types there were complaints of arm or hand signs in 35. Several cases of wry neck were among the 73 ambulatory admissions.

In view of the rocker movement characteristic of the cervical vertebrae, it is illogical to separate lesions involving luxation of the posterior articulations from those of the disk. Injuries affecting the one inevitably involve the other, since the vertebra moves as a whole. The more severe the degree of luxation, the greater the probability of involvement of the disk. In several such cases there has been complete disappearance of painful symptoms following fusion. Judging from the mechanics of the injury, it would appear that, where a disk protrusion is definitely demonstrated, fusion of the involved area should accompany the disk operation or follow it. Otherwise the ligamentous laxity may continue to cause symptoms and indefinite pain radiation over the area for which the disk operation was done. Prognosis in such cases therefore depends on rules of practice yet to be elaborated in a field which has not yet been adequately exploited and in which much progress is at present being made.

CONCLUSIONS

1. Elimination of the normal forward convexity of the cervical spine indicates mechanical derangement of the posterior intervertebral joints.

2. Specific diagnoses are possible in many hitherto obscure cervical injuries when properly executed roentgenography and neurologic findings are correlated.

3. Present day roentgenologic, neurologic and orthopedic technic when combined permit a more favorable prognosis in all types of injuries except those with complete neurologic signs.

4. Further investigation and end result studies are necessary to differentiate fully the luxation type from the disk protrusion type of cervical injury and for the proper remedy for the combined lesion.

716 Sassafras Street.

ABSTRACT OF DISCUSSION

DR. JOHN DUNLOR, Pasadena, Calif.: A few years ago I visited Dr. Darrach's clinic, and Dr. Barbara Stimson tried to demonstrate to me what she was terming "unilateral dislocations" and which I had been calling "unilateral dislocations" for a great many years. In manipulating those cases, in some instances we were able to get definite proof that something happened with the reduction, and immediately the patient was relieved after recovering from the anesthesia. On the other hand there have been a great many cases in that group with manipulation in which nothing seemed to happen, and the patient was partially relieved but went around with a sore neck for a good many weeks afterward. I am wondering if Dr. Davis will tell us whether or not he believes that that group of cases is probably the sprained neck of which he speaks. A good many years ago I began to see ruptures of the spinous processes from about the seventh cervical down to the second dorsal, where the ligamentum nuchae had apparently pulled away the spinous processes. When I started to do that work it was almost impossible from an x-ray point of view to get pictures which would demonstrate these fractures. I should like Dr. Davis to go into more detail concerning the dislocations and the anterior dislocations which are not demonstrated in the facets.

DR. RALPH K. GHORMLEY, Rochester, Minn.: I am not sure how important these lesions are in the acute stage, but it certainly is true in my experience that many of the patients come to physicians later on—perhaps three, four or five years later—

18. Mensor, M. C.: Injuries to the Accessory Processes of the Spinal Vertebrae, *J. Bone & Joint Surg.* 19: 381-388 (April) 1937.

19. Hall, R. D. M.: Clay Shovelers' Fracture, *J. Bone & Joint Surg.* 22: 63-75 (Jan.) 1940.

with painful necks in which there is evidence of some trauma. If the trauma had been recognized at the time of occurrence, the condition might have been alleviated and subsequent disability prevented. One question I want to ask Dr. Davis is whether or not he believes in manipulation of dislocations of the cervical portion of the spinal column under anesthesia or whether he prefers traction methods.

DR. FRANK R. OBER, Boston: In an anteroposterior x-ray view of the cervical spine one may derive a good deal of help by drawing transverse lines across the centers of the vertebrae which extend for 2 or 3 inches beyond the center. If these lines are not parallel, one may conclude that some damage has been done to the cervical spine. All lateral x-rays of the cervical spine should be taken with the patient sitting as Dr. Davis recommends, head erect, head flexed and head extended. A study of these three views will give one a good idea of any disturbances of the physiologic curve in the cervical region. Furthermore, the sitting position allows the shoulders to drop so that one will get a view of the first dorsal as well as all the cervical spines. I do not believe it is always possible to correlate the x-ray appearance with neurologic symptoms of the peripheral nerves. For instance, writers' cramp can be due to spasm of the scalenus anticus group of muscles as well as from narrowing of the intervertebral foramina. The pain from cervical spine lesions is not always located in the arm and hand. Pain under the shoulder blade may be a characteristic symptom. One must remember, however, that one can get spasm of the scalenus anticus muscles in arthritis of the cervical spine as well as in cases of congenital shortening of that muscle or in the presence of cervical ribs.

DR. A. G. DAVIS, Erie, Pa.: Dr. Dunlop used the term "sprain." This paper attempts a more specific diagnosis than the word "sprain" implies. A sprain is either a torn muscle, fascia, ligament or joint capsule. Roentgenologists argue that spasm in the cervical region should produce more hyperextension than normal because the great mass of musculature is on the posterior aspect of the cervical spine. My contention is that the person is leaning away from the point of greatest tenderness, and the point of greatest tenderness is the particular posterior facet where the capsule is torn. The first structure to part must be the capsule surrounding the involved pair of facets. The next structure involved is the posterior longitudinal ligament. A large number of the indeterminate so-called "sprains" that we treated with physical therapy, "hantleg" stretching and so on seem amenable to more rational treatment. If we analyze cervical injuries on the basis of the "whiplash" mechanism, regardless of the nature of the accident, and realize that the momentum of the head continues on after the moment of impact or throw and that the extreme excursion is immediately followed by a recoil induced by the powerful posterior muscles, the element of deception so introduced makes less of the injury than it actually is. The question of involvement of the ligamentum nuchae is eliminated by the absence of hematoma, ecchymosis and swelling, these signs being absent. The answer to Dr. Ghormley's question is that, whether the reduction is gradual or by manipulation, general anesthesia is never used because of the hazard. May I draw your attention to the difference in approach of roentgenologists and orthopedists. To a roentgenologist "seeing" is "believing," and he is careful to commit himself no further than visual evidence indicates. The orthopedist must make allowance for the unseen. The fact of negative evidence in the lateral and anteroposterior projections does not disprove the presence of a luxation. The dense structure of one accessory process conceals lesions of another. Oblique and special positional radiography to some extent overcomes this concealment factor. Dr. Ober aptly mentions the scalenus syndrome. This entity must always be eliminated, especially in cases exhibiting pain radiation to the fingers and thumb. The scalenus syndrome, however, is not associated with a straight cervical spine, nor would one expect other evidence of pathologic change in the cervical spine. This seems a significant point of differentiation.

Clinical Notes, Suggestions and New Instruments

BICUSPID AORTIC VALVE WITH RUPTURE OF CUSP

MAJOR WILLIAM H. FLYTHE AND CAPTAIN JAMES C. WREN
MEDICAL CORPS, ARMY OF THE UNITED STATES

A white soldier aged 29 was admitted to the hospital complaining of excruciating substernal pain radiating to both arms. He had been well until approximately one hour before admission to the ward, when, while walking at a normal gait, he was suddenly seized with a viselike pain centered at the top of the sternum radiating down the sternum and into both arms. He experienced severe vertigo and almost collapsed. He was immediately nauseated and vomited several times. Moderate dyspnea and diaphoresis were present. In spite of these symptoms he was able to walk to the admitting office of the hospital, not more than 100 yards away, where he was seen by the officer of the day and admitted to the medical service.

The past history revealed nothing of significance. It should be noted that the patient had been an active athlete, having



Ventricular surface of aortic cusp with longitudinal tear.

pitched soft ball professionally and semiprofessionally during the past fifteen years. He was admitted to the hospital on two occasions in February 1943 for an upper respiratory infection, and on both occasions his cardiovascular system was described as normal on physical examination.

The family history was entirely negative.

On physical examination the temperature was 97 F., pulse rate 78 per minute and respiratory rate 22 per minute. The patient was obviously in acute distress. An ashen pallor was present and the extremities were cold and clammy. The pulse was Corrigan in type and the systolic blood pressure was 108 and the diastolic 44. The heart was not enlarged to percussion. On auscultation a loud harsh systolic murmur was heard over the entire precordium, being loudest over the upper end of the sternum. A long blowing diastolic murmur, loudest at the left third intercostal space, also was present. The lungs were clear, the liver was not enlarged and no peripheral edema was present.

Laboratory studies revealed a red blood cell count of 4,600,000, white blood cell count of 10,000 and a hemoglobin of 85 per cent. The Kahn reaction was negative. A sedimentation rate revealed a fall of 5 mm. in one hour. Urinalysis showed no abnormal findings other than a moderate number of granular casts. Blood culture showed no growth after forty-eight hours. A nonprotein nitrogen determination forty-eight hours after

admission was reported as 60 mg. per hundred cubic centimeters. A portable x-ray examination of the chest on the third hospital day showed apparent enlargement of the heart to the left. The aorta was widened in the ascending portion and in the arch. The lung fields were completely cloudy throughout with the exception of the extreme apexes, the appearance being typical of pronounced pulmonary edema.

A clinical diagnosis of ruptured aortic cusp was made on admission, the diagnosis being based on the sudden onset of severe substernal pain together with physical signs of a definite aortic insufficiency which had not been present on previous physical examinations in this hospital.

During the subsequent course of his illness large doses of morphine were required to control substernal distress, especially during the first twenty-four hours. The patient was put into an oxygen tent. Within eighteen hours after admission there was evidence of beginning congestive heart failure, i. e. increasing cough with blood tinged sputum, increasing dyspnea and cyanosis, steadily increasing pulse rate, and rales at both lung bases. By the second hospital day there was evidence of cardiac enlargement by physical examination and considerable increase in moisture in the lungs. Congestive heart failure progressed rapidly despite all the usual measures, including rapid digitalization, and the patient died sixty-two hours after admission.

The autopsy, which was performed by Capt. Joseph I. Mossberger, revealed much congestion throughout the lungs save at the apexes, where there was moderate congestion. Dissection of the pulmonary vessels revealed no evidence of embolism or thrombosis. The heart weighed 400 Gm. The coronary arteries were normal in size and showed no evidence of occlusion. Dissection of the coronary arteries showed numerous small atheromas in the walls. The pulmonic valves appeared normal. The cusps of the mitral valves were normal in length but were spotted with numerous small atheromas. The tricuspid valves appeared shortened. The aortic ring was apparently dilated and presented only two aortic cusps. The right cusp was decidedly enlarged, measuring 5 cm. between its upper attachments to the aorta. It had no nodulus and presented a longitudinal tear of the lamina of the ventricular surface. This tear exposed the raw surface of the lamina of the aortic surface for an area 2 cm. in length and 8 mm. in width. The tear is demonstrated in the accompanying illustrations. The valve was thickened, contained numerous cholesterol spaces and in one area showed slight calcification. The aorta presented a few atheromatous lesions in its wall just above the aortic cusps. The heart and microscopic sections were reviewed by Capt. Joseph H. Eisner. The pathologic diagnoses were as follows:

1. Bicuspid aortic valve.
2. Rupture of aortic cusp.
3. Atherosclerosis of the aorta with subintimal hemorrhage and recent thrombus formation.
4. Atherosclerosis of the aortic cusps.
5. Atheromatosis of the mitral valve and coronary arteries.
6. Subepicardial punctate hemorrhages and ecchymosis.

COMMENT

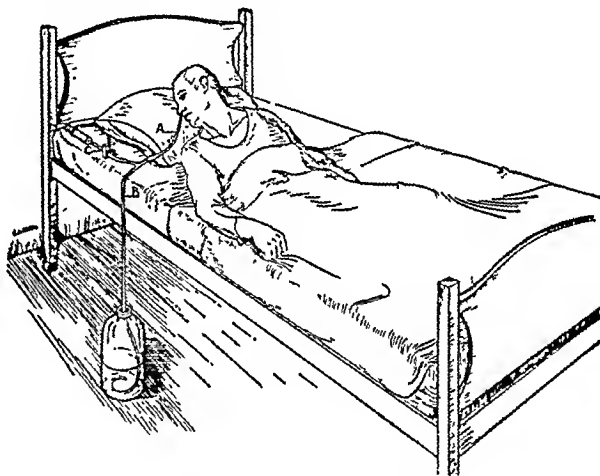
Pathologically the cause of the rupture was unusual. No evidence of syphilitic aortitis or of bacterial implant on the aortic valve was found, the rupture apparently occurring at the site of an atheromatous plaque. An interesting feature of the case clinically was the severity of the substernal pain, which during the first thirty-six hours was quite severe and was not entirely alleviated by frequent doses of morphine. The pain was characteristic of that produced by myocardial anoxemia. Although angina pectoris is not uncommon in the presence of aortic insufficiency, pain of this severity is not usually encountered even where the diastolic pressure is much lower. It seemed to us that the most likely explanation for the severity of the pain was the sudden increase in demand on the heart muscle produced by the rupture of the aortic cusp and the consequent aortic insufficiency, together with a decrease in coronary circulation following a lowered diastolic pressure.

A SIMPLIFIED SUCTION UNIT FOR INTESTINAL DECOMPRESSION

D. J. LEITHAUSER, M.D., DETROIT

The Wangensteen method for suctional drainage of the gastrointestinal tract is now widely used in the management of surgical patients. At first it was used for relief of intestinal obstruction, and more recently it has been employed to combat abdominal distention of all types, particularly after operation. In some instances it is used preoperatively as a prophylactic measure, particularly in cases in which distention may be anticipated.

The value of the procedure of gastrointestinal decompression is firmly established, but the Wangensteen apparatus presents certain difficulties that make the procedure burdensome, especially to the nursing staff. The equipment is cumbersome to handle, and its function is frequently interrupted by faulty connections, collapsed or kinked tubing and at times too much suction. Errors in setting it up may even cause reversal of flow, filling the gastrointestinal tract with water. I have found it particularly difficult to maintain suction with these units in patients subjected to early rising after operation, because of the necessity of disconnecting the apparatus frequently.



Suction unit for intestinal decompression.

To eliminate these difficulties, a simple siphon suction unit has been substituted; this functions equally well and avoids all the difficulties presented by cumbersome equipment and multiple connections. Since intra-abdominal pressure is always greater than atmospheric pressure, and since this is increased in proportion to the degree of distention or rigidity, actual suction is unnecessary. The simple T tube arrangement makes use of siphonage plus the elevated intra-abdominal pressure and functions as well as positive suction.

DESCRIPTION

A glass T tube connects the Levin or Miller-Abbott tube (A) to a rubber tube of a larger lumen (B), whose opposite end is immersed in a bottle below water level. The bottle is placed on the floor beside the bed. A short rubber tube is attached to the vertical arm of the T tube. The patency of the Levin or Miller-Abbott tube is determined by applying a clamp on B and then injecting and aspirating water with a large syringe through C. The clamp on B is then released and water is injected into the bottle on the floor, to prime the unit. A clamp then is placed on C, and the unit is ready to function. Gas passing through the tubing frequently breaks the siphon suction, but this is compensated by increased intra-abdominal pressure, which automatically reestablishes suction. Occasional flushing of the tubing to eliminate mucous plugs and priming are the only attentions needed to keep the apparatus functioning. Elimination of the aspirating bottle or bottles and substitution of the T tube connection does away with multiple connections

and stopper through which leaks may occur. If the lumen of the glass T tube is the same as that of the rubber tubing, leaks in the system are avoided and equal pressure is maintained throughout.

This simple unit has been used to provide decompression of the gastrointestinal tract in surgical cases for over a year. By the time it had been used six months other surgeons at St. Joseph Mercy Hospital had also adopted it, so that at present the older type of apparatus is seldom used. The nurses are enthusiastic about the simpler unit, because it is so much easier to regulate and keep functioning satisfactorily, and much more easy to set up and to handle.

14727 Jefferson Avenue, East.

ERGOTAMINE TARTRATE IN THE TREATMENT OF WAR NEUROSES

LIEUTENANT COLONEL ROY R. GRINKER
AND

MAJOR RUSSELL J. SPIVEY
ARMY AIR FORCES, MEDICAL CORPS, ARMY OF THE UNITED STATES

Since ergotamine tartrate has been recommended as a useful drug in the treatment of "battle reaction,"¹ it was thought that it might prove valuable in the treatment of "operational fatigue" (war neuroses) in flying personnel returned to this country from combat.

Patients selected for treatment with this drug were those with evidence of sympathetic overactivity, manifested particularly by increased restlessness, tremor, sleeplessness, tension and agitation. The dosage given at first was that recommended by Heath and Powdermaker: 3 mg. for the first dose, then 2 mg. every three hours for ten days. Because of untoward symptoms this dose was quickly modified to 2 mg. every four hours for four doses daily for ten days. All patients in this report were given the latter dosage, except the first 3, who were given the larger dose for the first twenty-four hours only. All were confined to the ward during treatment and were carefully examined each day.

A total of 16 patients received the ergotamine tartrate (Gynergen, Sandoz); 1 mg. tablets were used. Thirteen of these developed toxic symptoms, notably pains in the legs and arms. Phlebitis developed in 3 patients; in 2 actual thrombi occurred. No improvement of the symptoms of sympathetic overactivity was observed in 10 patients. Only 2 showed improvement in their tremors while taking the drug but reverted to their previous status when it was discontinued. There were 2 others who showed improvement in both sleep and tremor, but 1 of these successes was due to abstinence from alcohol while under treatment. One stutterer showed improvement in his speech. Another slept better while under treatment but did not show any change in restlessness or tremor. None of the benefited patients maintained improvement after the drug was discontinued.

Two additional groups were given the same dosage of ergotamine tartrate. One group of 11 patients suffering with "operational fatigue" were selected at random. They were scattered about the hospital in the various wards and were not housed together. Eight of the 11 developed pain and soreness in the inner aspects of the upper third of their thighs after receiving an average total of 13.7 mg. of the drug. Of the 3 who developed no symptoms, 2 showed no change in blood pressure and 1 showed a lowered blood pressure. Of the 8 who developed symptoms, 2 manifested no significant blood pressure change and 6 showed a lowering of blood pressure.

Eleven normal healthy male adults were given the same dosage simultaneously with the patients. Eight of the 11 developed the typical pain and soreness in their thighs after an average total dose of 12 mg. Of the 3 who had no untoward effect, 2 showed no significant blood pressure change and 1 showed

an elevation. Of the 8 developing symptoms, 1 showed a slight elevation, 3 no change and 4 a lower blood pressure.

Experience with the first group of 16 patients led to the interpretation of the pain and soreness of the thighs as an untoward effect of the drug and as a precursor to potential vascular change. Since 3 of the original group of patients had developed a phlebitis following the complaint of pain and soreness, it was decided to stop medication on both of the later groups at the end of the third day, when each had received a total of 24 mg.

Ergotamine tartrate was originally used because of the properties as an orthosympathetic inhibitor by Heath and Powdermaker, who reported success in 20 cases. Goodman and Gilman² state that the autonomic blocking effect of ergotamine in man is slight and irregular. It however damages the vascular endothelium, producing vascular stasis, thrombosis and gangrene.

According to these statements there should be little reason to consider ergotamine tartrate valuable in the treatment of sympathetic overexcitation, and toxic effects could be anticipated. Moreover, rational therapy of war neuroses should be directed not against the symptoms but toward the basic causes. This is as axiomatic in psychiatry as in other fields of medicine. It is for this reason that "uncovering technics" are employed successfully.³

CONCLUSIONS

1. Ergotamine tartrate in tablet form, given 2 mg. four times daily to an average total dosage beyond 12 to 14 mg., produces symptoms which are interpreted as evidence of toxicity.
2. Improvement was infrequent and not sustained.
3. In our hands ergotamine tartrate is not useful in the treatment of "operational fatigue" as seen in this hospital.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following reports. HOWARD A. CARTER, Secretary.

ZENITH RADIONIC HEARING AID, MODEL B-3-A, ACCEPTABLE

Manufacturer: Zenith Radio Corporation, Chicago 39.

This is a vacuum tube instrument of three tubes consisting of a transmitter, a magnetic bone conduction receiver and a battery unit. Weights and overall dimensions of the various parts are as follows: transmitter, 5¼ by 2¾ by 1 inch; weight, 5 ounces; receiver, magnetic bone conduction, standard size. Batteries weigh 13 ounces. Total weight of the entire instrument is 20 ounces.

Batteries.—Voltages and current drains are as follows:

A battery, 1.5 volts. Current drain at full volume, 90 milliamperes.

B battery, 45 volts. Current drain at full volume, 1.2 milliamperes.

Acoustic Gain.—The Council tests were made on an observer with impaired hearing. There is no standard method for testing bone conduction.

Overall gain for speech, 35 decibels. The test was made in a free tone field at a distance of 5 feet from the loud speaker. The range of frequency response was tested with an electrical mastoid device measured by response on a cathode ray oscillograph. The frequency response included 4,000 cycles. However, there was considerable distortion in the wave at all frequencies, but this apparently did not influence speech intelligibility.

Physical and Mechanical Features.—The instrument differs in no way either in appearance, dimensions or weight from Zenith Model HA originally submitted to and accepted by the Council.

2. Goodman, L., and Gilman, A.: *The Pharmacological Basis of Therapeutics*. New York, Macmillan Company, 1941.

3. Grinker, R. R., and Spiegel, J. P.: *War Neuroses in North Africa. The Tunisian Campaign (January-May 1943)*. New York, Josiah Macy Jr. Foundation, September 1943.

From the AAF Convalescent Hospital (Don-Ce-Sar Place), St. Petersburg, Fla.

1. Heath, R. G., and Powdermaker, Florence: *The Use of Ergotamine Tartrate as a Remedy for "Battle Reaction,"* J. A. M. A. 125: 111-113 (May 13) 1944.

Performance.—This bone conduction instrument performs in a satisfactory manner and could certainly be used when such a combination is indicated. The construction and caliber of constituent parts all measure up to Council standards.

Recommendation.—The Council on Physical Medicine voted to include the Zenith Radionic Hearing Aid, Model B-3-A, in its list of accepted devices.

ZENITH RADIONIC HEARING AID (MODEL A-3-A WITH AIR CONDUCTION RECEIVER) ACCEPTABLE

Manufacturer: Zenith Radio Corporation, Chicago 39.

This is a vacuum tube instrument of three tubes consisting of a transmitter, a magnetic air conduction receiver and a battery unit. Weights and overall dimensions of the various parts are as follows:

Model A-3-A with magnetic AC receiver: transmitter, $5\frac{1}{4}$ by $2\frac{3}{4}$ by 1 inch; weight, 5 ounces; receiver, $\frac{7}{8}$ inch in diameter. Batteries weigh 13 ounces. Total weight of the entire instrument is 20 ounces.

Batteries.—Voltages and current drains are as follows:

A battery, 1.5 volts. Current drain at full volume, 90 milliamperes.

B battery, 45 volts. Current drain at full volume, 1.2 milliamperes.

Acoustic Gain.—The Council tests were made by trained observers using fitted ear molds in a tone field (sound proof room) seated 5 feet from the loud speaker delivering frequencies of pure sine wave characteristics. Tests for speech were made on an observer with impaired hearing.

Volume Control Set at	Tone Control Position	Frequency						
		256	512	1,024	1,448	2,048	2,896	4,096
$\frac{1}{2}$	1	10	14	13	13	21	6	3
$\frac{1}{2}$	4	9	10	10	13	17	6	3
Full	1	14	24	28	30	25	15	10
Full	4	21	29	20	23	25	15	7

Overall gain for speech, 39 decibels.

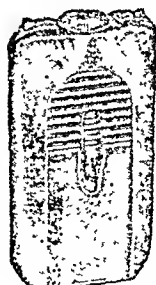
Physical and Mechanical Features.—The instrument differs in no way either in appearance, dimensions or weight from Zenith Model HA originally submitted to and accepted by the Council with one exception: it has a new type neutral colored cord and air conduction receiver. Cord noise is much reduced, and the inconspicuousness of the receiver is an advantage. The earpieces are similar to those supplied with the original instrument.

In some cases it has been found that they do not give an adequate fit, under which conditions a molded earpiece is more satisfactory. The air conduction receiver for this unit is a bit different in characteristics from that used with the A-2-A. The phone is marked on the back with a letter B.

Performance.—The acoustic gain of this unit is somewhat greater than Model A-2-A. However, at maximum intensity there is a certain amount of overload and case noise. It is the opinion of the Council that it would be impossible to use the soft rubber tip earpiece supplied with this instrument if high intensities were required. Again the tone control, as in the other model, fails to give

a sharp frequency shift but gives rather a reduction of intensity. With tone control in number 1 position one gets the overall frequency response of the instrument. In number 2 position the low frequencies are attenuated. In number 3 position both highs and lows are attenuated. The number 4 steps up the lows.

Recommendation.—The construction and quality of parts are satisfactory. This together with the actual acoustic gain for both tones and speech qualifies the aid for acceptance by the Council. The Council on Physical Medicine voted to include the Zenith Radionic Hearing Aid, Model A-3-A, with air conduction receiver in its list of accepted devices.



Zenith Radionic Hearing Aid.

ZENITH RADIONIC HEARING AID, MODEL A-2-A, ACCEPTABLE

Manufacturer: Zenith Radio Corporation, Chicago 39.

This is a vacuum tube instrument of two tubes consisting of a transmitter, a magnetic receiver and a battery unit. Weights and overall dimensions of the various parts are as follows: transmitter, $5\frac{1}{4}$ by $2\frac{3}{4}$ by 1 inch; weight, 5 ounces; receiver, $\frac{7}{8}$ inch in diameter. Batteries weigh 13 ounces. Total weight of the entire instrument is 20 ounces.

Batteries.—Voltages and current drains are as follows:

A battery, 1.5 volts. Current drain at full volume, 90 milliamperes.

B battery, 45 volts. Current drain at full volume, 0.60 milliamperes.

Acoustic Gain.—The Council tests were made by trained observers using fitted ear molds in a tone field (sound proof room) seated 5 feet from the loud speaker delivering frequencies of pure sine wave characteristics. Tests for speech were made on an observer with impaired hearing.

Volume Control Set at	Tone Control Position	Frequency						
		256	512	1,024	1,448	2,048	2,896	4,096
$\frac{1}{2}$	1	9	12	12	15	14	15	10
$\frac{1}{2}$	4	10	10	10	10	10	12	7
Full	1	19	20	20	27	27	18	10
Full	4	23	26	15	25	25	16	10

Overall gain for speech, 35 decibels.

Physical and Mechanical Features.—The instrument differs in no way either in appearance, dimensions or weight from Zenith Model HA originally submitted to the Council except that it has a new type neutral colored cord and air conduction receiver. This is an improved feature. Cord noise is much reduced, and the inconspicuousness of the receiver is an advantage. The change in type of vacuum tube which the maker reports does not change the performance of the instrument to an appreciable extent. The earpieces supplied are similar to those supplied with the original instrument. In some cases it has been found that they do not give an adequate fit, under which conditions a molded earpiece is more satisfactory.

Performance.—The acoustic gain for pure tones and speech is adequate. The tone control still does not give a straightforward shift in frequency but rather a modification of intensity. With tone control in number 1 position one gets the overall frequency response of the instrument. In number 2 position the low frequencies are attenuated. In number 3 position both highs and lows are attenuated. The number 4 position steps up the lows.

Recommendation.—The construction of the instrument meets all requirements of the Council, and the individual parts are all of good quality. The performance of the instrument is entirely adequate for use by a person with impaired hearing. The Council on Physical Medicine voted to accept Zenith hearing aid Model A-2-A for inclusion in its list of accepted devices.

Council on Foods and Nutrition

ACCEPTED FOODS

The following additional foods have been accepted as conforming to the Rules of the Council on Foods and Nutrition of the American Medical Association for admission to Accepted Foods.

GEORGE K. ANDERSON, M.D., Secretary.

FOODS FOR SPECIAL DIETETIC PURPOSES (See Accepted Foods, 1939, p. 295).

The Chicago Dietetic Supply House, Inc.

CELLU BRAND JUICE-PAK DARK SWEET UNPITTED BING CHERRIES
Analysis Edible Portion (submitted by manufacturer) —Moisture 81%, invert sugar 13.7%, sucrose 0.3%, crude fiber 0.2%, undetermined carbohydrates, etc. (by difference) 2.9%, fat (ether extract) 0.8%, protein (N x 6.25) 0.7%, ash, 0.4%.

Calories.—0.6 per gram; 18 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - CHICAGO 10, ILL.

Cable Address - - - "Medic, Chicago"

Subscription price - - - Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, JANUARY 20, 1945

PHILADELPHIA SESSION CANCELED

The Board of Trustees of the American Medical Association, after consideration of all factors involved, has officially announced the cancellation of the Ninety-Fifth Annual Session of the Association scheduled for Philadelphia June 18-22. This is the fourth time in the Association's history and the second time during the present war that an annual session has not been held. In 1861 the annual session was postponed for a year because of the outbreak of the war between the states. In 1862 it was again postponed for a year. The 1943 annual session scheduled to have been held in San Francisco was canceled. Last year the session was held in Chicago. It is expected that a meeting of the House of Delegates will probably be held in 1945 in Chicago at a time to be announced later in THE JOURNAL. The action this year is taken voluntarily in order to cooperate to the fullest possible extent with the request of the Office of Defense Transportation and in the interest of the nation's war effort.

BREAD ENRICHMENT SHOULD BE CONTINUED

Among the important applications of the numerous advances in nutrition is the development of the program for enrichment of food. By order of the War Food Administration all baker's white bread, white rolls and sweet rolls must be enriched with vitamins of the B complex and iron to stated levels. The content of enriched baked goods in thiamine, niacin and iron is thus brought to the desirable high levels of these constituents found in similar products made from whole wheat flour. The value required for riboflavin slightly exceeds that of whole wheat preparations.

The continuance of these benefits to the nation's nutritional standard is not now assured beyond the

duration of the emergency. The compulsory enrichment of baker's white bread and rolls terminates with the resolution of the wartime powers of the War Food Administration. The problem then reverts to the individual states as to whether enrichment of these foods will continue to be required. Legislation at the federal level would affect only those products handled in interstate commerce. Both federal and state action will be required to insure entirely effective regulations for enrichment of food throughout the country.

The need in the American diet for the additional amounts of nutrients supplied by enrichment of baked goods has been shown by dietary surveys. A summary of these surveys published by the National Research Council¹ revealed a strikingly high proportion of the diets below the recommended levels in one or more essentials. A detailed study of the average American diet prior to the advent of enriched flour and bread showed the thiamine content to be 0.8 mg. per 2,500 calories,² whereas the National Research Council's recommended daily allowance for thiamine is 1.6 mg. for this caloric intake. In an extension of the work mentioned the daily intake of riboflavin was determined to be 1.4 mg. and that of niacin 11 mg. per 2,500 calories.³ Both these figures are below the value of 2.2 and 15 mg. respectively recommended by the Research Council for these dietary essentials.

The enrichment of flour and bread is considered particularly desirable because these foods are consumed daily in significant amounts by practically every one. They are relatively cheap foods and are therefore used extensively by the low income groups whose diets are most in need of improvement. The addition of thiamine, riboflavin, niacin and iron to white flour and bread serves to replace what has been lost in the milling process. The appearance and taste of the original food are not changed; the consumer receives added nutritional value without change in food habits or conscious effort. Enriched white bread is not intended to supplant the use of whole wheat bread by those preferring the latter.

The effect of the widespread increase in consumption of these enriching substances on the nation's nutrition as a result of mandatory enrichment of all white bread and rolls is difficult to measure accurately at this time. All methods of appraisal, however, indicate a definitely beneficial influence. It has been calculated⁴ that, if all the flour and white bread in the average prewar diet should be enriched, the average thiamine intake would be increased to 1.6 mg., that of riboflavin to 1.6 mg.

1. Report of the Committee on Diagnosis and Pathology, Food and Nutrition Board, National Research Council, Bull. 109 of the National Research Council, November 1943.

2. Lane, R. L.; Johnson, E., and Williams, R. R.: Studies of the Average American Diet, J. Nutrition 23: 613, 1942.

3. Cheldelin, V. H., and Williams, R. R.: Studies of the Average American Diet, J. Nutrition 26: 417, 1943.

4. The Facts About Enrichment of Bread and Flour, prepared by the Committee on Cereals, Food and Nutrition Board, National Research Council, September 1944.

and that of niacin to 17 mg. per 2,500 calories.³ This would enable the average diet in this country to meet the recommended allowances for thiamine and niacin, with something to spare. The amount of riboflavin still falls short of the recommended level, but new information indicates that the daily allowance for riboflavin may appropriately be lowered. As more direct evidence of the contribution of bread enrichment to the improvement of this country's nutritional status, the statement made by Dr. Jolliffe of the New York University College of Medicine at a public hearing held by the War Food Administration Jan. 21, 1943 is particularly significant:

I attribute to bread enrichment a marked and unmistakable decrease in florid beriberi and florid pellagra in my wards at Bellevue Hospital. In 1938-39 little bread was enriched; in 1942-43 seventy five per cent or more has been enriched in New York City. This has been accompanied by a decrease of three fourths in our cases of florid beriberi and two thirds in florid pellagra.

The benefits which accrue to the vastly greater number of individuals suffering from milder chronic degrees of these deficiency states, in many cases unrecognized or attributed to other causes, can probably be considered the greatest contribution of enrichment. An improvement in the general health and well being and an increased efficiency in the population as a whole may be anticipated, since carefully controlled experimental groups have shown measurable benefits as a result of dietary increases of enrichment materials to enrichment levels.

The Food and Nutrition Board of the National Research Council and the Council on Foods and Nutrition of the American Medical Association, groups particularly cognizant of the beneficial effect of nationwide enrichment of white bread on the American dietary, have called attention to the necessity of making this requirement permanent throughout the country. In 1941 the Board of Trustees of the American Medical Association approved the recommendations for bread enrichment. The American Public Health Association has recently adopted a resolution favoring appropriate federal and state action for the perpetuation of the benefits of enrichment. South Carolina, Louisiana, Alabama, Texas, Mississippi and Kentucky have already adopted legislation requiring the enrichment of all white bread and white flour sold within their borders. Similar legislation is being given consideration at present in other states. The physician, who can give effective support to these measures, should recognize the contribution made by the enrichment of bread to the improvement of our diets. If the nutritional gains thus far made are to be maintained, the active interest of every informed person who has the public interest at heart will be required.

PROLONGING THE ACTION OF PENICILLIN

The versatility of American medical research is well illustrated by the announcement of a third successful method of prolonging the therapeutic action of penicillin. Trumper and Hutter¹ of the National Naval Medical Center, Bethesda, Md., are credited with this technic.

Earlier investigators² found that within an hour after intravenous injection of penicillin fully 60 per cent of the injected dose is excreted in the urine. The penicillin titer of the blood stream falls to zero before the end of the second hour. As a result of the evanescent character of this drug, many of the earlier clinical cases failed of cure. In the Bethesda Hospital, of 10 patients with gonorrhea given a single intramuscular injection of 50,000 Oxford units of penicillin only 2 were cured. Two doses of 50,000 units each given at six hour intervals effected a cure in only 55 per cent of the cases.

The first successful method of prolonging the action of penicillin was by excretory blockade. This was effected by the simultaneous intramuscular injection of diodrast³ or of p-aminohippuric acid.⁴ Both of these substances reduce the rate of renal excretion of penicillin by about two thirds. As a result of this reduced excretion the penicillin titer of the blood stream is maintained at a therapeutic level for nearly six hours, well beyond the two hour effective therapeutic period in control, nonblockade, patients.

The second successful method of accomplishing the same result was by suspending penicillin in some inert oil that would slow down the rate of absorption from locally injected tissues. Romansky and his associates⁵ tested several oils and waxes for this purpose and found that a mixture of peanut oil and from 1 to 6 per cent of beeswax gave the best results. Intramuscular injection of 50,000 Oxford units in 2 to 2.5 cc. of beeswax-peanut oil so slows down the rate of absorption from the injected muscle as to maintain an effective therapeutic level in the blood stream for a period of from six to seven hours. The mixture was tested on 65 patients with gonorrheal urethritis, 64 of whom were cured by a single intramuscular injection. This represents a 98 per cent therapeutic success as contrasted with the 20 per cent success in their earlier treatments with the same number of penicillin units dissolved in saline solution.

A third successful method is currently reported from the Bethesda Medical Center.¹ This is based on an attempt to delay absorption by prolonged vasoconstriction.

1. Trumper, Max, and Hutter, A. M.: *Science* **100**: 432 (Nov. 10) 1944.

2. Florey, H. W.; Abraham, E. P.; Chain, E.; Fletcher, C. M.; Gardner, A. D.; Heatley, N. G., and Jennings, M. A.: *Lancet* **2**: 177, 1941. Rammelkamp, C. H., and Keefer, C. S.: *J. Clin Investigation* **22**: 425, 1943.

3. Rammelkamp, C. H., and Bradley, S. C.: *Proc. Soc. Exper. Biol. & Med* **53**: 30, 1943.

4. Beyer, K. H.; Woodward, R.; Peters, L.; Verwey, W. F., and Mittis, P. A.: *Science* **100**: 107, 1944.

5. Romansky, M. J., and Rittman, G. E.: *Science* **100**: 196, 1944.

tion in the injected muscle. Vasoconstriction was effected by a chilling technic. An ice bag was applied to the deltoid region two hours before the intramuscular injection and replaced for a period of six to twelve hours after the injection. With this technic a single intramuscular injection of 50,000 units of penicillin in saline solution maintains an adequate bacteriostatic level of penicillin in the blood stream for from six to twelve hours. Thus far the chilling technic has been applied to 18 gonorrheal patients, 17 of whom were cured by a single intramuscular injection. This is a percentage of cure equal to that with the penicillin-beeswax-peanut oil mixture. Application of an ice bag two hours in advance of the injection renders the injection painless.

The chilling technic may be applied in research with other therapeutic agents. With specific antisera it might well reduce allergic reactions.

Current Comment

FEDERAL HOSPITAL CONSTRUCTION PROGRAM

An appropriation of \$110,000,000 is suggested in a bill pending in Congress to assist states in the construction of hospitals and related facilities. The bill, S. 191, was introduced January 10 by Senator Hill of Alabama for himself and Senator Burton of Ohio. It was referred to the Senate Committee on Education and Labor, of which Senator Murray of Montana is chairman. Of the total federal appropriation suggested, \$5,000,000 will be available to assist states to inventory existing hospitals, to survey the need and to develop a program for new construction. An additional \$5,000,000 will be available to cover the administrative expenses in carrying out state plans. The remainder will be used, if the legislation is enacted in its present form, for construction purposes. On a federal level the program will be under the direction and supervision of the Surgeon General of the U. S. Public Health Service aided by a federal advisory council all members of which, except one, will be appointed by the administrator of the Federal Security Agency. The Surgeon General will serve as chairman ex officio of the council. On a local level a state agency must be designated in plans submitted for approval as the administrative agency. The term "hospital" is broadly defined. It will include "public health centers and general, tuberculosis, mental, chronic disease, and other types of hospitals, and related facilities, such as laboratories, outpatient departments, nurses' home and training facilities, and central service facilities operated in connection with hospitals, but shall not include any hospital furnishing primarily domiciliary care." The term "public health center" is defined to mean "a publicly owned facility for the provision of public health services and medical care, including related facilities such as laboratories, clinics

and administrative offices in connection with public health centers." It must be assumed that the Senate Committee on Education and Labor, through its recently created permanent subcommittee, which, it is announced, will consider all proposed public health legislation, will desire to give careful consideration to this legislation before recommending its enactment. A detailed analysis of the provisions of the bill will appear in an early issue of THE JOURNAL.

MORE STUDY OF FOREIGN LANGUAGES NEEDED

This war has apparently not been accompanied by any significant outbursts against the music, language or literature of enemy countries such as occurred in World War I. Indeed, the study of German, Japanese and some other languages has been actually stimulated, though this has been principally a practical project, wholly associated with contemplated military operations or ultimate occupancy of foreign countries. After the war scientific and medical discoveries will doubtless be made in what are now enemy countries and will be described in their own language and scientific periodicals. The opportunities and facilities for the study of foreign languages are far greater in this country than they have ever been in Australia, whose medical journal has recently taken editorial¹ notice of the need for such study there. The linguistic ability of most Americans compares unfavorably with that of Europeans and others who are exposed early in life to two or more languages. Many leaders of educational opinion in this country have claimed that there is no good reason to teach foreign languages in the schools before the usual high school age. This claim should be reexamined. Medical science has never failed to recognize the need for widespread dissemination of new discoveries; a most important instrument is comprehension of the language in which the discovery is made. Any improvement in methods, therefore, by which a greater knowledge of foreign languages can be achieved in this country will deserve the support of the medical profession.

CONGRESSES ON MEDICAL EDUCATION AND INDUSTRIAL HEALTH

At the time of going to press the status of the Congress on Medical Education and Licensure, which is scheduled to convene February 12-13, and of the Congress on Industrial Health, scheduled for February 13-15, is not altogether clear. Since these two meetings were organized for the purpose of contributing to the war effort the Office of Defense Transportation has been asked for a ruling on whether these meetings should be held. As soon as a decision has been reached the profession will be promptly notified through the pages of THE JOURNAL. In the meantime, participants and prospective visitors to the congresses should plan on their being held.

1. Australian Medicine and Foreign Language, editorial, M. J. Australia 2: 515 (Nov. 11) 1944.

MEDICINE AND THE WAR

ARMY

FLIGHT NURSE SAVES LIFE OF PATIENT INJURED IN CRASH LANDING

The War Department recently revealed the heroic action by a flight nurse aboard an Air Transport Command evacuation plane in the South Pacific. Second Lieut. Mary Louise Hawkins, Redwood City, Calif., was the flight nurse in charge of 24 litter patients, Palau battle casualties, en route to Guadalcanal when the plane began running short of gasoline. The pilot, passing over a tiny island, noted a clearing 150 feet square fringed by tall coconut palms and decided to attempt a crash landing in this restricted area rather than ditch the plane at sea. During the landing of the C-47 a propeller tore a hole in the side of the fuselage; patients and crew were uninjured with one exception. The injured man received a severe cut in his throat, which severed the trachea but missed the jugular vein. Through the swift and efficient work of Lieutenant Hawkins the man's life was saved. She devised a suction tube from various accessories including an aseptic syringe, colonic tube and the inflation tubes from a Mae West. With this contrivance she was able to keep the man's throat clear of blood until aid arrived nineteen hours later. Lieutenant Hawkins graduated from the Highland Hospital School of Nursing, Oakland, Calif., in 1942 and immediately enlisted in the Army Nurse Corps. After a year at AAF Hospital, Walla Walla, Wash., and Camp Kearns, Utah, she was chosen for special training as a flight nurse. Assigned to the Air Transport Command in August 1944, she was sent immediately to her present station in the South Pacific Wing.

COLONEL ANTHONY J. LANZA RETIRES

Col. Anthony J. Lanza, director of the Occupational Health Division, Preventive Medicine Service, Office of the Surgeon General, has retired from active duty to resume his work as assistant medical director of the Metropolitan Life Insurance Company. Dr. Lanza is credited with the establishment of the Army Industrial Hygiene Laboratory at Baltimore, which makes surveys and recommendations for the control of occupational hazards on request by any army branch. He was also instrumental in organizing the Armored Medical Research Laboratory at Fort Knox, Kentucky, to conduct medical, physiologic and engineering research for the Office of the Surgeon General so that our fighting men might be better equipped and prepared to withstand the rigors of adverse climatic conditions. Prior to entering the Army Dr. Lanza was for sixteen years assistant medical director of the Metropolitan Life Insurance Company in charge of industrial hygiene. He is also a member of the Council on Industrial Health of the American Medical Association.

HOSPITALIZATION OF RETURNING CASUALTIES

Major Gen. Norman T. Kirk, Surgeon General of the Army, recently stated that the large increase in casualties returning from the battlefronts is making it impossible to send all patients to hospitals near their homes. General Kirk said that more than 30,000 sick and wounded were brought back to this country in December—an increase of 300 per cent over July. The three principal factors which guide the medical department in the selection of the hospital to which a soldier is sent are:

1. Where can the patient get the best treatment for his particular case?
2. What hospitals offering such specialized services have the facilities to care for additional cases?
3. What suitable and available hospital is located nearest to the soldier's home?

ARMY AWARDS AND COMMENDATIONS

Captain Samuel S. Pasachoff

The Bronze Star Medal was recently awarded to Capt. Samuel S. Pasachoff, formerly of New York City. The citation read "For meritorious service in connection with military operations against the enemy as general surgeon, 45th Evacuation Hospital, Semimobile, from Nov. 24, 1943 to Aug. 1, 1944 in England and France. Captain Pasachoff performed skilful operations on wounded soldiers, often going for long periods without rest or relief. In addition he designed and constructed numerous surgical articles which proved highly essential to the efficient operation of the hospital. The professional skill, ingenuity and devotion to duty displayed by Captain Pasachoff reflect credit on himself and the military service." Dr. Pasachoff graduated from New York University College of Medicine in 1929 and entered the service March 22, 1943.

Major Harvey D. Bingham

Major Harvey D. Bingham, formerly of Mercer Island, Wash., was recently awarded the Bronze Star Medal "for meritorious service in connection with military operations against the enemy from June 26 to Aug. 1, 1944. As chief of the surgical service in a station hospital at Kwajalein, Major Bingham organized a surgical staff which functioned smoothly in spite of crowded facilities and inadequate equipment. Established as a 400 bed unit, the hospital cared for 2,900 casualties in less than six weeks. Major Bingham's surgical skill and judgment were a vital factor in the excellent professional care rendered." Dr. Bingham graduated from Washington University School of Medicine, St. Louis, in 1938 and entered the service Feb. 3, 1941.

Major J. Marion Kirtley

Award of the Bronze Star was recently made to Major J. Marion Kirtley, formerly of Crawfordsville, Ind., who is now commander of the medical detachment of the 22d United States Infantry with the 3d Army in Germany. His detachment turned in a remarkable performance in caring for the wounded in the Hurtgen forest fighting recently in Germany. Dr. Kirtley graduated from Indiana University School of Medicine, Indianapolis, in 1936 and entered the service Dec. 14, 1940.

Captain Garland N. Adamson

Capt. Garland N. Adamson, surgeon of a tank battalion and formerly of Chicago, was recently awarded the Bronze Star Medal "for heroic achievement in connection with military operations against an enemy of the United States in France, on Nov. 11, 1944. . . ." Dr. Adamson graduated from Meharry Medical College, Nashville, in 1922 and entered the service in November 1942.

Major Edmund G. Beacham

The Bronze Star Medal was recently awarded to Major Edmund G. Beacham, formerly of Baltimore, for "meritorious achievement in military operations against the enemy from June 7 to July 4, 1944, in Normandy, France." Dr. Beacham graduated from the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, in 1940 and entered the service Feb. 3, 1941.

Major Anthony S. Terranova

Major Anthony S. Terranova, formerly of Brooklyn, was recently awarded the Bronze Star Medal for "meritorious achievement." Dr. Terranova graduated from Georgetown University School of Medicine, Washington, in 1937 and entered the service July 15, 1942.

NAVY

CAPTAIN RODDIS HEADS MEDICAL
HISTORY BOARD

Vice Admiral Ross T. McIntire, chief of the Bureau of Medicine and Surgery, has recently approved establishment of a Medical History Board in the Bureau of Medicine and Surgery which will be headed by Capt. Louis H. Roddis (MC), U.S.N., as chairman.

"The board, through its chairman, shall report to, advise and assist the Surgeon General on all matters within its scope as hereinafter defined.

"The functions of the Medical History Board shall be (a) to plan, cause to be prepared and edit an official history of the Medical Department of the U. S. Navy, (b) to coordinate historical activities within the Bureau of Medicine and Surgery and the Medical Department, as well as with the Office of Naval History, Navy Department, and (c) to maintain liaison with such other military and civilian historical agencies as may be required in the prosecution of the functions of this board.

"Establishment of said board does not preclude Medical Department personnel or activities preparing historical accounts on subjects of special cognizance, concern or interest, but any and all of these must be submitted to said board for review, coordination and approval before they can be recommended for official publication."

MEDICAL CORPSMAN WINS NAVY CROSS

The Navy Cross for "gallantry and intrepidity in action" while attending wounded and dying men on the Normandy beaches on D day, has been awarded to August B. McKee, hospital apprentice, formerly of Jersey City. The citation, in part, states that "McKee, cut off from the remainder of his unit and working under intense enemy fire with utter disregard for his own safety, attended the wounded with such skill and devotion to duty as unquestionably to have resulted in the saving of many lives. . . . Working with such meager supplies as he was able to salvage from the dead and wounded, and all the while working under intense machine gun and sniper fire, McKee attended the wounded and comforted the dying with utter disregard for his own safety until help reached him several hours later."

LIEUTENANT ROBERT BROWNE MISSING

Lieut. Robert Browne, formerly of Peoria, Ill., has been reported missing in action. He was stationed on a destroyer which was lost in the Philippine action in October. Dr. Brown graduated from the University of Illinois College of Medicine, Chicago, in 1942 and entered the service in July 1943.

MISCELLANEOUS

WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

Induction Center, Grand Central Palace, New York: Diagnosis of Anorectal Disease, Dr. Max Cowett, February 2; Head Injuries, Dr. Eli Jefferson Browder, February 9 and February 16.

U. S. Naval Hospital, Philadelphia: Edema and Dehydration, Dr. F. William Sunderman, February 9; The Esophagus and Its Diseases, Dr. L. H. Clerf, February 23.

U. S. Naval Hospital, Naval Operating Base, Norfolk, Va.: Nucleus Pulposus—Medical Aspect, Dr. Lay Martin, February 2; Nucleus Pulposus—Surgical Aspect, Dr. Francis J. O'Tenasek, February 2.

Newton D. Baker General Hospital, Martinsburg, W. Va.: Indications for Use of Sulfonamides and Penicillin, Dr. Henry B. Mulholland, February 5; The Psychoneuroses in War, Dr. David C. Wilson, February 5; Treatment of Patients with Paraplegia Due to War Injuries, Dr. Donald Munro, February 19; Liver Diseases Seen in the Present War, Dr. Wallace Yater, February 19.

Station Hospital, Fort Belvoir, Va.: Skin Eruptions of the Eczema Group, Dr. Walter O. Teichmann, February 26.

Station Hospital, Fort George G. Meade, Maryland: Evaluation of the Surgical Risk, Dr. John Finney Jr., February 2.

Crile General Hospital, Cleveland: Technique of Closure of Colostomies, Dr. Thomas E. Jones, February 27.

Air Base Hospital, Patterson Field, Dayton, Ohio: Diagnosis and Surgical Treatment of Acute Cholecystitis, Dr. George Heuer, February 21.

Winter General Hospital, Topeka, Kan.: Plastic and Maxillary Surgery, Dr. Earl C. Padgett, February 22; Clinical Psychiatry, Dr. G. Leonard Harrington, February 22.

Tilton General Hospital, Fort Dix, New Jersey: Pathology of Allergy, Dr. Paul Klemperer, January 22; Post-Traumatic Pain Mechanisms, Dr. E. A. Rovenstine, January 29.

Mayo General Hospital, Galesburg, Ill.: Dermatologic Diseases, Drs. James H. Mitchell and Francis E. Sencar, January 24.

Birmingham General Hospital, Van Nuys, Calif.: Classification and Diagnosis of the Anemias, Dr. Alvin Foord, January 24.

U. S. Naval Hospital, Oceanside, Calif.: Psychosomatic Medicine, Dr. Douglas Eaton, January 25.

U. S. Naval Hospital, Corona, Calif.: Surgery of the Traumatic Abdomen, Dr. Charles Phillips and Comdr. Gaylord Bates, January 25.

FILM DEPICTS FITTING PROSTHESES

British Information Services (30 Rockefeller Plaza, New York 20) now has available, for sale or loan, a two reel film revealing the part played by modern science in the making and fitting of artificial limbs, by means of which disabled persons are able to follow their old occupations or work at new trades which are taught them at government training centers. Participating in the film are former patients of Roehampton, one of Britain's hospitals devoted to the treatment of limbless war casualties. The film shows how men with the new artificial limbs are able to work at engineering, drafting, carpentry and other highly skilled occupations which formerly they could not have followed. With the aid of special tools provided by the government they are now able to work at these trades with speed and absolute efficiency. Some of these men are shown in their hours of recreation playing tennis, golf, billiards or table tennis or at work in the garden.

HOSPITALS NEEDING INTERNS
AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment service:

(Continuation of list in THE JOURNAL January 13, page 97)

MASSACHUSETTS

Boston City Hospital, Boston. Capacity, 2,537; admissions, 35,559. Dr. James W. Manary, Medical Director (resident—dermatology-syphilology).
Cambridge Hospital, Cambridge. Capacity, 272; admissions, 6,078. Dr. F. A. Washburn, Director (intern, July 1; male preferred).
Burbank Hospital, Fitchburg. Capacity, 270; admissions, 4,303.
Mr. Richard Bullock, Directing Trustee (intern, April 15, July 1).
Waltham Hospital, Waltham. Capacity, 215; admissions, 3,299.
Mr. Walter R. Amesbury, Administrator (2 interns, July 1).

RHODE ISLAND

Homeopathic Hospital, Providence. Capacity, 196; admissions, 5,439.
Mr. Carl A. Lindblad, Director (interns, July 1).

WEST VIRGINIA

Charleston General Hospital, Charleston. Capacity, 380; admissions, 10,439. Dr. John E. Cannady, Director (intern; resident—pathology).

WISCONSIN

Luther Hospital, Eau Claire. Capacity, 176; admissions, 4,006.
Mr. N. E. Hanshus, Manager (intern, March 1; intern, May 1; general resident, July 1).

ORGANIZATION SECTION

ANNUAL CONFERENCE OF SECRETARIES AND EDITORS OF CONSTITUENT STATE MEDICAL ASSO- CIATIONS

SECOND SESSION, FRIDAY AFTERNOON

DR. D. L. CANNON, Montgomery, Ala., Presiding

(Continued from page 106)

Medical Service Plans

DR. ROBERT E. S. YOUNG, Columbus, Ohio: The wealthy, who comprise perhaps 6 to 8 per cent of our population, need no particular plan for medical care. There is a large group of the middle and low income levels that definitely need a plan for prepayment medical insurance. The C. I. O. in its report on hospitalization in 1940 pointed out that nine out of ten of its families are dependent on the wage earnings of one person, and that one third to one half of the poverty arising in each family is due to the illness of this wage earner. The people in this group desire insurance coverage. A great part of our population have already availed themselves of prepayment insurance. There are now approximately 15,000,000 people covered by the Blue Cross Hospitalization Plan. There are now approximately 18,000,000 subscribers covered by industrial and commercial insurance plans. Considering the number of people who are covered by labor plans, by benevolent associations and by brotherhood plans of various types, including their dependents as well, at least half of the population would seem to be already covered by some type of prepayment insurance plan.

There is a third group in our population, the indigent and the medically indigent, who need medical service and cannot and will not be able to pay for it. Prepayment insurance cannot reach this group. One might think that governments would be interested in protecting this group; apparently they are not. The indigent are receiving care from the medical profession and from the hospitals largely on a charity basis. Why isn't the solution of the problem simple? It is not simple because medical needs vary with different localities. The cost of medical care that is purchased on a need basis is higher in our Northern states and in our large cities than it is in the Southern rural areas. It would be difficult to fit a plan to all areas of the United States. Plans of this sort are pregnant with political power, and political power is interfering with the formation of a plan.

We have long known the cash indemnity plans which commercial insurance companies offer. We owe it to our county societies to educate them about the difference between a cash indemnity plan and a service plan. Few know the dangers and evils of both and the good points of both. In a cash indemnity plan it is fundamental that there is no contract between the physician and the patient. The contract is between the patient and the insurance company. This tends to fix the minimum fees for physicians, but it is no ceiling on maximum. This is important. A physician in times of inflated prices, as today, may charge more than an insurance policy will pay. He can receive payment from the patient, from the insurance benefit and an additional fee from his patient himself. In more normal times the fee probably would cover the service. In periods of depression it is doubtful if any physician would charge less than the minimum fee. This fixes the minimum fee for medical service. A service plan fixes the maximum fee. A plan such as the Michigan Medical Service, for example, started out as a pure service corporation. The fee schedule was a little lower than normal because physicians thought that if they collected all of their fees they would not suffer the loss usually taken in poor collections. However, these plans are nonprofit corporations. If premiums are adequate to cover the submitted bills and are building up, so that a reserve fund is being formed, either benefits must be increased ultimately or premiums must be lowered. If, however, the premiums collected are not suffi-

cient to cover the benefits or the medical bills, the medical bills must be prorated. Now in most service plans proration has been experienced. In other words, no floor is put under medical fees. They may go down as far as proration makes it necessary, but a ceiling has been placed on medical fees in that the physician cannot charge more than the fee schedule.

The Michigan Medical Service Plan found, as most service companies have found, that it was necessary to modify the pure service corporation and approximate a cash indemnity form. It therefore dropped out the medical service and kept only the surgical benefits. It agreed that, if a patient had an income greater than the income level set in the plan, the physician might charge an additional fee. In February 1943 the average income of people in the state of Michigan was \$52.81. These are Department of Labor statistics. The income level under the Michigan Medical Service Plan is \$2,500 for the family. This put virtually every one in the state of Michigan over the income level of the Michigan Medical Service Plan. It is necessary for the doctor to prove that an individual's income is higher than the income levels of the plan. This makes it difficult in these times for physicians to charge more than the fee schedule.

The second great danger in a service corporation that does not exist in a cash indemnity corporation is the intervention of a third party. I am using Michigan Medical Service because it is the largest service corporation. In the cities of Flint and Pontiac the physicians became dissatisfied with the plan and published a statement in the newspapers that they were going to drop out of it. There is considerable danger in service plans that are developed on a cooperative basis that a third party may take over the plan. In periods of depression people who have put off medical services because they were busy, perhaps working overtime, may delay their need for services until a more advantageous time. In a recession more service will be required under a service plan than is required now. If that becomes necessary, proration will probably again be necessary. The plan is dependent on pay roll deduction. If we have general unemployment the plan will cease to function. One of the men from the Michigan Medical Service, when I was there in 1942, stated that the Educational Research Department of Social Security had suggested that they underwrite the loss of the Michigan Medical Service, which I believe at that time was about \$700,000, if they would bring physicians under salaries, that being a fit cause for the expenditure of educational funds. I wonder what will happen to service plans if unemployment becomes general and unions insist on the operation of such plans. Have we opened ourselves to a subtle infiltration of federalization? I am afraid that we have and we at least should think about this point and build our defenses for it.

Blue Cross Hospitalization has long felt the need for an extension of its policy to cover medical, surgical and obstetric charges. In Ohio we found that Blue Cross first had attempted to form a stock company which it could control, but this plan had been rejected by the superintendent of insurance, who stated that it would be impossible for them to transfer funds from the Blue Cross for the purpose of starting another company. It then approached the Ohio State Medical Association with a plan for the development of a mutual insurance company which might be largely financed by physicians, with the thought and suggestion that this would give physicians control. It even stated that the board of trustees could be completely formed of physicians. However, in a mutual insurance company the incorporators have no power other than to appoint the board of trustees and the director. The money, funded and placed with the superintendent of insurance, has no power of control. The control in a mutual insurance company lies with the subscriber. It was thought by the directors of the Blue Cross movement that if proxies were sent down to the subscribers through a subscribers' committee—and a subscribers' committee had been organized by the Blue Cross director in Ohio to func-

tion in industry—they would be signed and returned to the director and he could then return the company. However, this is questionable. It has been my experience in studying plans all over the United States that labor is interested in control, and if proxies came down through their own subscribers' committees the proxies would be returned to the unions; then the unions would control the new mutual insurance company which was working with Blue Cross. If this should be true, the plan would then become a consumer cooperative. Because of the necessity that Blue Cross faced in its need for a policy to write these additional benefits, they could exert considerable influence on Blue Cross to conform to the consumer cooperative. Physicians then could be approached if they charged more than the cash indemnity benefit. The director of Blue Cross, who would also be director of the Mutual Insurance Company, could approach the hospitals and exercise some disciplinary power on physicians through the hospitals to maintain the fee schedule set up by the mutual insurance company. If that should be true—and we felt that it probably would be—the fee schedule would become only secondary in importance because it could be changed. For that reason in Ohio we rejected this plan of a mutual insurance company and suggested that a stock company be formed which would be controlled by the medical profession and would write medical, surgical and obstetric benefits on a cash indemnity basis. This new company will not be associated directly with the Ohio State Medical Association. If it should fail or if it should become unpopular, the Ohio State Medical Association would suffer. We hope that we may distribute the stock to a large number of physicians, that one physician may never own more than a small part of the stock, and that it will never pay dividends but that premiums and benefits will be adjusted, so that in effect it will become a nonprofit organization. The directors of Blue Cross in Ohio rejected this plan, since they saw nothing in it that they could carry to their board of trustees. We think that in their rejection we proved our point that they were not interested in a new company to cover the needs of the people but were more interested in control.

What do we need to further prepayment insurance? We need more people in our county societies who understand the principle of insurance. They must at least understand the differences between cash indemnity and service plans. We need county societies that are willing to discuss such problems. I think that we should start in the medical schools, and I suggest that chairs be established in medical schools to teach medical economics and sociology. We should include our medical students in our county societies under some type of membership and let them become interested in organized medicine. Our interest in organized medicine needs to be stimulated now. Any means that we can devise to stimulate it is necessary.

DISCUSSION

DR. WILFRID HAUGHEY, Battle Creek, Mich.: We have a medical service plan in Michigan; I participated in the development of it, from the time it started in our county medical society until the time it was adopted by the state; I am still on the board of directors; in fact, I am vice president. We had plenty of trouble; we were the originators; we had to do something for which there was no program; we were developing something new and we had to try and plan. We set up our plan first to cover complete medical and surgical care in the home, in the office and in the hospital, and we got stung. We had surveys made. We spent a lot of money trying to find out what it cost to take care of the people. We found out what the cost is in Michigan to take care of the people when they are paying their own medical service. We spent around \$20,000 to find that out. Then we took those figures and doubled them, figuring that we would have an adequate rate. If we had multiplied them by $4\frac{1}{2}$ we would have had an adequate rate. We started out with about 8,000 policyholders in the complete medical care program, and before we could finish them up at the end of the year we were in debt \$150,000. Now, we also started out with a surgical plan, which we are still running. We never were \$700,000 in the hole, but we were \$504,000 in the hole on Oct. 30, 1942. At that time we had prorated for four months. Instead of paying our doctors 100 cents on the dollar, we paid them 80 cents on the dollar. That

was part of the plan. Every cent of that has been paid back. We owe nothing. We have a little balance, a surplus or a reserve, whatever you would call it. We also have some funds to work on which we did not have to start with. We now have over 720,000 persons being served by the Michigan Medical Service. We have about \$300,000 of government bonds and quite a little money in the bank. We have some reserves set up for bills that the doctors haven't sent in yet. That was in the \$500,000. We are expecting to get those bills in and to pay them. Some of the Genesee County men did sign up with us at first. One man from Genesee County opposed the whole plan from the first. A lot from Genesee County have opposed it ever since. They said that we had no business to go into the insurance business anyway, that it was an insurance business and not a medical business. They wanted us to make a cash indemnity plan. The C. I. O. had some influence in our getting the Chrysler Corporation. They made a study of all insurance plans, nonprofit and profit, voluntary and everything else that they could find. They made a study that extended over four or five months. They published a pamphlet of sixty-odd pages, and the conclusion was that the best plan for their own interest was the Michigan Medical Service. While this company wanted to take out insurance in an old line company, they compelled them to take the Michigan Medical Service. That is where the C. I. O. helped us. C. I. O. did have a quarrel with some of the doctors up in Flint too, but the doctors in Flint did not come back after two months. They are not back yet. The doctors in Flint are practicing, not as cooperating doctors but as doctors who render service and send their bills. They still do not send their bills to the Michigan Medical Service. They send their bills to the patients. The patients send the bills to the Michigan Medical Service. The checks are written and accepted. There is one member of the C. I. O. on our board and I have seen him attend just two meetings in the last five years; none of those have been within the last two years. He attended one meeting when we were having trouble with the Genesee County delegation. He brought with him a whole committee, and the committee told us that they would see to it that Genesee County came into line. All they wanted was for the Michigan Medical Service to go ahead and do business. Within the next two or three years we are going to know whether we are going to be practicing medicine as individuals or as employees of the state. You should offer a service that will prevent the Murray-Wagner-Dingell bill. How are you going to offer a service unless you offer it through medical service plans, and how better to offer it than through a plan that is absolutely administered by the medical profession? There is no dictation.

DR. W. F. DONALDSON, Pittsburgh: No hospitalization dictation, Doctor?

DR. HAUGHEY: No, sir, we run our own plan.

DR. DONALDSON: Could you take time to outline your relations with Blue Cross?

DR. HAUGHEY: When we started, the Blue Cross plan had been working in Michigan. It had a sales organization and was a going concern, I think with around 150,000 subscribers. We hooked up with them. They sell our program at the same time they sell their own. They present both wherever they make presentations. Sometimes our program is taken and sometimes it isn't, as testified to by the fact that we have 720,000 certificates and they have 1,200,000. They got to the point this last spring where they could not sell more policies because the Michigan Medical Service had held up on our sales to big companies. We held up because of the deficit, which was never \$700,000, but we wished to pay it off. It is paid off. Now we are again selling policies, and we have sold over 100,000 policies in the last five months. Michigan Hospital Service has sold more than that. They sell our policy. They collect the money from the employer. It comes to the central office in one check for both hospital service and medical service. They pay us our part and we pay them a certain percentage for handling that part of our program. We are paying them 7 per cent right now for handling that part of the program, the sales and the collection from the employers and a lot of records and things that are kept, bookkeeping and so on. The rest of it

we handle ourselves, and our rate of cost is around 10 cents. We must sell these things. I think that Ohio is delaying Michigan by not coming into this. I think that any state that does not start something of this nature to meet the Wagner-Murray-Dingell bill is setting back the progress of our fight against regimentation of medicine. I do not see any other way to beat it than to offer what these dreamers are offering. Who is going to take this service? The working man does not stop to think things out. He takes what he is given. The government says "We will give you complete medical care, hospitalization, office and everything else." He accepts it unless we can show him something that is just as good and does not cost him as much. There is an item too! It does not cost as much under our plan as it does under the government plan. Kaiser was touted as having a wonderful plan. The Kaiser plan does not meet the services that Michigan is rendering to the doctors. It costs more and they don't give the services. The Kaiser plan charges \$50 extra for an obstetric case. The Kaiser plan charges \$10 extra for a tonsil case under 16 years of age. The Kaiser plan provides one hospital to which they can go. It provides a complete choice of doctors, provided the doctor is one in this hospital or on a certain list that is published in their circular. We make no restriction on the doctors. The patients choose their own doctors, and the doctors are getting their checks within about ten days or maybe two weeks.

DR. OLIN WEST, Chicago: Dr. Haughey, will you be good enough to explain the nature and extent of the service that is rendered under the Michigan service plan and to say whether or not it is contemplated that the total medical service feature will be reinstated?

DR. HAUGHEY: The Michigan Medical Service now renders surgical service in the hospital. It pays up to \$15 for x-ray service in connection with any surgical service or if it is contemplated. It pays for obstetric service in the hospitals. We have set up a tentative rate and authorized the sale of up to \$50,000 of those policies, and we expect to service them until we know some of the things that we have found out in surgery. When we find that our rates are right we expect to cover that. We are also studying complete service. We do not expect to offer it immediately, but we can. We think we know what it would cost, and we could offer it if the occasion demanded it. There is a lot of agitation in Michigan, and it comes chiefly from Genesee County, that we authorize surgical service any place but not in the hospital. They say that our paying for surgical service in the hospital clutters up the hospitals and they say that they cannot get their legitimate cases in because they have minor cases in the hospitals. Our experience with complete medical service is still rankling a little, we do not know the answer, nor does anybody else.

DR. WEST: Your contemplated medical service will be for hospitalized service only?

DR. HAUGHEY: That will all be service in the hospital.

DR. WEST: Your present volume does not include any medical service other than these surgical and obstetric cases?

DR. HAUGHEY: Surgical and obstetric is the present volume. We canceled out all of that other. In order to get on our feet we had to do so.

DR. H. H. SHOULDERS, Nashville, Tenn.: Doctor, may I ask if you have tried to sell it to individuals or just to groups?

DR. HAUGHEY: We sell it just to groups.

DR. SHOULDERS: You have had no experience with what the cost of the sale would be if it was sold to individuals?

DR. HAUGHEY: We will take a group as small as ten if it is a legitimate group.

DR. SHOULDERS: That is under one employer?

DR. HAUGHEY: One employer, a legitimate group, and that group must be 100 per cent. For the big groups we require 75 per cent coverage. We did not at first. We were told that 40 per cent coverage was perfectly legitimate and safe, but it is not. We found that out.

DR. R. L. SENSENICH, South Bend, Ind.: Does the 10 cent cost that you quoted include the 7 cent cost of acquisition?

DR. HAUGHEY: No.

DR. SENSENICH: That is a total of 17 cents?

DR. HAUGHEY: That makes a total of 17 cents. I am not sure of that. That 7 cents may be included in the 10 cents. I haven't looked that item up.

DR. SENSENICH: I should imagine that it would be more than 10 cents, based on other charges.

DR. HAUGHEY: I think the 10 cents covers our office and the 7 cents covers the other.

DR. R. B. ANDERSON, Fort Worth, Texas: I just wanted to ask if the obstetrics is covered only in the hospital.

DR. HAUGHEY: Obstetrics is covered only in the hospital. All of our service is covered in the hospital. The time that these laboring people suffer a catastrophe is when they have to go to the hospital. The average can take care of the cost of \$2 or \$3 for a visit at his home or at the office.

DR. F. F. BORZELL, Philadelphia: May I ask what experience you have had in your relationship with the Blue Cross plan, that is, in their selling the plan and turning the funds over to you? I am assuming that you adjudicate all claims, both of the subscriber and of the doctor.

DR. HAUGHEY: We do all that ourselves.

DR. BORZELL: Has the Blue Cross had any difficulties from that score, in that it is your agent and representative and then later on any questionable claims for medical service must be referred to the Medical Service Plan?

DR. HAUGHEY: The Medical Service takes the medical claim; the Blue Cross takes the hospital claim; then we have a committee that meets periodically and adjusts whatever differences there are.

DR. SHOULDERS: What is your present rate, Doctor?

DR. HAUGHEY: I think it is a basic 60 cents per month for an employed male. The employed female has to pay more.

DR. E. L. HENDERSON, Louisville, Ky.: Don't you include the family?

DR. HAUGHEY: We have a rate for the family too. The rate as assessed when we sell the policy is a schedule apportioned between the number of men and the number of women employed in the group that is insured, so that the rate is different for each factory.

DR. WINGATE M. JOHNSON, Winston-Salem, N. C.: North Carolina was the first state in the Union to have a hospital coverage. In 1935 Dr. Mannerzan was the president of the state medical society. He offered that as a recommendation. He was made chairman of the committee, which went to work, and we have had a Blue Cross plan in operation since 1936. A year ago last May we added to it the surgical and obstetric coverage.

DR. W. EDWIN BIRD, Wilmington, Del.: The Delaware plan was operating in the fall of 1935.

DR. GEORGE H. KRESS, San Francisco: You may be interested in knowing something about the statewide medical service on the service basis, that of the California Physicians Service, now in its sixth year, which has a gross income of \$1,500,000 on the unit basis, paid to the doctor for an office visit. The unit of payment is \$2.50. We are now paying \$2.25 and there is every prospect in the near future of the full normal unit being paid to our men. I am in full accord with what Dr. Haughey has said about the value of the service plan. I concur in his point of view, and I think most Californians would likewise, that the indemnity plan will only lead to disaster. You will not be able to sell it to the people and to the political powers when it comes to taking over, in case the government does ultimately take over. During the last year we found that it was desirable to make some changes in our mode of operation from our idealism of six years ago. The California Physicians Service started out with something like 5,000 professional members. It charged \$5 registration, which netted \$25,000. The California Society lent \$42,000. They made blunders and as time went on, just as Michigan had its experience of running into the red, so did California Physicians Service run into the red. This last year, instead of letting the California Physicians Service be an absolutely separate entity, we brought it back into the California Medical Association. To that extent I must oppose the recommenda-

tion of Dr. Young not to let the state society have anything to do with it. The most potent force from the standpoint of protection of the medical interests is your constituent state association and the component county societies. The indirect board of directors was a group of administrative members, voted in by the doctors, presumably from the congressional districts, but in a state as large as California it is not possible to bring them together. It was the board of administrative members that elected the seven trustees. We changed the setup through legislative action in our incorporation. Now the house of delegates of the California Medical Association recesses at its annual session and becomes the board of administrative members of the California Physicians Service.

DR. HAUGHEY: That is the way we do in Michigan.

DR. KRESS: And it is the board of administrative members that elects the trustees. The whole thing today comes back into the full and absolute control of the California Medical Association. It isn't the lay public that endangers a plan such as the Medical Service Plan. When you get to operating in your own groups and territories you will find that your troubles are within the profession itself. Just as Michigan has had troubles, so have we had troubles. In San Diego everybody is satisfied and the profession is working hand in hand with us. In Alameda there is a strong group that is reluctant to accept the program, as is Genesee County. By and large the members are working with us and are beginning to see the benefit of this setup. Before you start your plans, study carefully the Michigan and California plans, the service setups, because through trial and error, with no actuarial experience, they have learned some things. It would be a great pity for you to make the same mistakes that they made and had to learn at a loss of dollars and a great deal of trial and tribulation.

Mrs. ELIZABETH D. BOLLIS, Honolulu, Hawaii: We have a medical plan in Honolulu that has now been operating since 1939. It was revised rather in 1939, and since its revision it has been most successful. It is, of course, much smaller than the Michigan and the California plans, but we give a medical service, a surgical service and a hospital service. We had no Blue Cross in Honolulu and so we had to start from scratch. All the doctors in the county participate. The doctors are paid for the service, and since the reorganization of the plan they have received 100 per cent of the bills that they have presented. The bills are presented according to a fee schedule. We had to start with the revision of the plan by taking the plans that were already in operation or, in most cases, proposed, and we took from them what we thought were the best provisions. Michigan has just told you of the experiences that it has had and so has California. Both California and Michigan must have a wealth of material in their statistics and in their experiences that these other plans that are just beginning to originate could profit by. In most plans the waiting periods are alike. In some plans the premiums are alike. You will have to meet your local conditions and your local doctors' wishes.

DR. C. A. SMITH, Seattle: I should like to say something about the Medical Service Bureau that exists in Washington, because it differs in some respects from that of any other state. Chronologically this practice was first established in Washington. It is between twenty-five and thirty years ago that the Pierce County Medical Society in Tacoma set up its Medical Service Bureau. Since that time five counties have set up these bureaus. Each one is autonomous, but the principles are the same in all of them. They furnish medical, surgical and hospital service to their clients. Something over a year ago the insurance commissioner of the state declared that these bureaus were in reality carrying on an insurance business and demanded that they be incorporated as insurance companies. After due deliberation the Washington Medical Insurance Corporation was established and the fifteen medical bureaus of the different societies carry on the business. According to the insurance corporation they provide service to individuals, to groups and to families. They provide medical, surgical and hospital services. Washington has never had anything to do with the Blue Cross. The medical service bureaus were established and working a good many years before it appeared. The men of

Washington could not see that the Blue Cross offered anything to employees that weren't already being furnished by the Medical Service Bureaus. Washington is one of the few states in which the Blue Cross is not working a plan. They sell their policies in Washington, but they work them through the Blue Cross headquarters in Portland, Ore., and have nothing to do with the medical bureaus' services. King County, which is the largest county, now has its own hospital and, strange to say, it has been presented to the bureau by the United States government. Two years ago, when the shortage of hospitals existed in all parts of the country, there was a shortage of beds in Seattle. Industry has been much expanded in Seattle by the shipbuilding yards. There was a great shortage of hospitals. PWA offered to allocate \$600,000 if the county commissioners would provide \$200,000 to build a 200 bed addition to the county hospital. Before the commissioners could do that they had to get the consent of the voters. When it was put up two years ago there was not a sufficient vote to carry that through, so then some of the officers of the King County Medical Service Bureau suggested that they should make an approach to accept this offer from the PWA. They investigated, and we all thought it was a great tribute to the success of the bureau and a mark of confidence by the government officials in their executive ability that they accepted the plan. About a month ago this Doctors' Hospital was completed and is now accepting patients. The cost was approximately \$1,000,000, of which the government supplied \$665,000 and the Medical Service Bureau, through its corporate body, which is called the Medical Service Corporation, provided the remaining funds. The local bureau averages about 80 patients continually in the hospital. They had a lot of trouble with the hospital previously as to financial arrangements, so that the remaining beds are open to the patients of any member of the King County Medical Society. The doctors in the state of Washington believe that the medical service bureaus established in the state are going to be a strong argument to oppose the establishment of state medicine. At every session of the legislature bills are introduced to carry out some kind of a state medical service. Probably in the coming session bills will be introduced as usual, but the setup of the medical service bureaus by the doctors will be a strong argument to be presented against it.

DR. YOUNG: I did not expect the men representing the service plans to be happy about my talk on the Michigan Medical Service. Do you still have the C. I. O. Grievance Committee in the Michigan Medical Service office?

DR. HAUGHEY: Yes, they do the work of men whom we had to hire otherwise to do it. They solve the problems out in the factories, and we had to have employees in the hospital do that. The Grievance Committee now does it better than we could do it.

DR. YOUNG: Is it true that, when the physicians in Flint and Pontiac published their newspaper article and dropped out, the C. I. O. passed a resolution counteracting that move?

DR. HAUGHEY: I don't know, but they took action counteracting it. I don't know about their passing a resolution. I know that the Flint doctors published things in the newspapers and they did a lot of those things, but the Flint doctors are still objecting to us, but they are taking our checks and they are doing the work.

DR. YOUNG: Did the C. I. O. use the Michigan Medical Service as a means of trying to unionize Ford?

DR. HAUGHEY: No. We had the Ford Company and we started out with around forty some thousand policies and built the number up to around seventy-two thousand policies in the Ford Company. We had an understanding with the Ford Company that they would renew when the year was up, but they sent auditors around to our office—the C. I. O. wasn't in there—this was the Ford Company that sent auditors around to our office to find out if we were making anything off of those Ford people. Well, we were, so they demanded one month's free service. We did not want to give it. The state insurance commissioner recommended that we give it because we were nonprofit. So we authorized the one month's free service. After that was authorized, Ford canceled and never came back.

DR. YOUNG: In theory a service organization is one that gives all of the medical service that the public is able to consume. I think it is a fundamentally wrong idea. It is the same as though we were to organize an insurance company which would make it possible for you to have an automobile as often as you want it. If we were to do that you would want one at least once a week because you would rather have a new one than have the old one washed. Your wife would have one that would match the color of every one of her dresses. The premium for such a plan would go up to the point where it would be impossible for you to keep it up. Now that is the fundamental principle behind a service organization. It is one that will give all of the medical service necessary. When any one starts a plan of that sort he gets into trouble. The Michigan Service did. The plan in San Diego that folded up last year did. The California Physicians Service did. When they get into trouble they modify their plan to the point where it approaches a cash indemnity plan. In Michigan they have said that their plan when it takes in people over a \$2,500 limit becomes a cash indemnity plan in that the physician can charge more. Some plans attempt to limit the services so that they put brakes on their service corporation, but when you start with a service plan you always keep the evils of the service plan. If we hit a recession, pay roll deductions will stop at least in part. People will have less work to do and it will be an opportune time to get things done that they have been putting off and the Michigan Medical Service may again run in the red.

DR. HAUGHEY: No, we will not.

DR. YOUNG: This opens up the possibility. You collect a number of premiums during the month and you do a number of medical services during the month. You pay for the medical service according to a fee schedule. If you pay according to a fee schedule, it depends entirely on the number of services that are rendered in a month. If a large number of services are rendered you may find that you are unable to pay them all and that you must prorate. If you find that the number of services is small, you will have to pay fewer bills and you will build up a surplus. If you build up a surplus—and I understand that you have a surplus—some one is going to ask how about reducing premiums or increasing benefits because it is incorporated as a nonprofit organization and should not build up too much of a surplus. When you do that then you have pushed it down to the point where any fluctuation in the value of the dollar or any fluctuation in employment jeopardizes the plan. What happens if we have inflation? Your physicians may be stuck with a fee schedule that is too low. I think the plan is based primarily on an economic system where employment is stable and the value of the dollar is stable. Most serious is the fact that it is so definitely associated with the state association. If the plan fails it will justify the charge that is always made that physicians are not competent to take care of financial matters and that we should turn the administration of all of this over to a lay group. If the plan were not associated directly with the medical association and it failed, it would be of no particular consequence to any one except those involved in it. Michigan has done a lot toward meeting the needs of the public and stopping socialized medicine. I wonder if in the long run they might not be making it possible for the government to finance their failure and then take it over by that method. I think this is a very difficult thing to foresee and that there are still some loopholes in the Michigan Medical Service Plan.

DR. HAUGHEY: We shall not fold up when we have a depression. Those people have to keep on paying their service charges, their monthly instalments, and those fellows will all promptly go on to the unemployment compensation rolls, and in order to be on the unemployment compensation rolls they must not be in the hospital. They must be ready to work, so they cannot come for any more surgical benefits if they are on unemployment compensation, which they all go on as soon as they get laid off. Our insurance commissioner has approved our building up a reserve sufficient to carry us about five or six months, and most of these unemployment conditions do not last that long. We believe that we are safe.

(To be continued)

MEETING OF THE CALIFORNIA MEDICAL ASSOCIATION

*Foreword and Resolutions Adopted by the House of
Delegates of the California Medical Association in
Special Session in Los Angeles on January 4, 5 and 6*

To the House of Delegates of the California Medical Association:

Your Resolutions Committee submitted a preliminary report at yesterday's meeting (Jan. 5, 1945) and it will be assumed that the members of the House have in mind the general tenor of that report. At yesterday afternoon's session twenty resolutions were presented, in addition to those previously submitted, and all these your committee had to consider between last evening's hour of adjournment and this morning's meeting, which was scheduled to begin at 9 o'clock. Your Resolutions Committee remained in session until after 1 o'clock this morning, and it now submits to you this supplemental report.

Before proceeding with consideration of specific resolutions, we believe it advisable briefly to review the immediate circumstances leading up to this special meeting of the House of Delegates of the California Medical Association, so that the house may bear in mind one fundamental point, which is that the house must give a specific answer to a specific question.

Early in December 1944 His Excellency Governor Earl Warren conferred with the officers and councilors of the California Medical Association and stated to them in substance that he favored and urged the establishment by law of a system for the distribution of the costs of medical care, to be financed, if necessary, through new and additional pay roll taxes. Governor Warren stated that he had an open mind as to the details of any such system. He requested the California Medical Association to inform him of the type of tax financed medical care plan, if any, that the association would approve.

Subsequently, officers and members of the association have held informal conferences with representatives of organized labor and a representative of the California farm bureau. Representatives of labor and a representative of the farm bureau have appeared before the council and before the delegates at this special meeting of the House of Delegates. The governor of the state of California has asked of us a question. We must now proceed to answer it.

Most of the resolutions submitted by members of the house and considered by the committee contain various answers to the governor's inquiry. Your committee felt that to consider each resolution separately would involve both duplication and unnecessary prolongation of this special three day session. Therefore your committee has prepared a substitute resolution containing a specific answer to the question that has been propounded to the association. The resolution proposes a plan for state assistance in the solution of the problem of the distribution of the costs of medical care, but it does not contain any acceptance, direct or indirect, of the basic provisions of any known compulsory health insurance system.

Your committee recommends that this house of delegates express its appreciation of the sincerity of purpose of the governor and the representatives of labor and of agriculture in their proposals looking toward a solution of the problems before us. We recognize with gratification that an important forward step has been taken in the furtherance of mutual understanding and cooperation between the California Medical Association and the leaders of the public its members serve. It is our earnest desire to seek the continued advice and cooperation of all parties having interests in the solution of our mutual problems.

Your committee now submits the following resolution:

Resolved, That the California Medical Association is of the firm conviction that no fundamental and revolutionary change in the practice of medicine should be made under present wartime conditions. If disruption occurs in the rendering of medical service, the result can well be a catastrophe for the people of the state. That major disruption would occur if health insurance were made compulsory by the state is self evident, regardless of approval or disapproval by the doctors of a new system in principle. This is true for two reasons: The doctors remaining in civilian practice after over 3,000, or approximately one third, have gone into military service are barely able now to provide medical service for a greatly expanded population and greatly expanded industry and they do

it by working to or beyond the limit of sustained endurance. If, now, they are forced to go through a period of change to a new and unfamiliar system of practice, medical service to the people will break down. This is not theory. We know from experience with California Physicians' Service that the process of educating doctors and patients, to say nothing of administrators, to operate under an unfamiliar system is not accomplished overnight.

Furthermore, from experience of California Physicians' Service, in the war housing projects where a full coverage plan was in operation it was found that the demand for service was vastly increased under a complete prepayment system—in fact as much as doubled. Without arguing how much increased service is or is not desirable, the plain fact is that the doctors are doing all they can now, and a large increase in demand for service will with absolute certainty break down medical care in California, and be it further.

Resolved, That the California Medical Association cannot endorse any system of compulsory health insurance which has thus far come to its attention; and be it further.

Resolved, That the California Medical Association is equally convinced that there is an existing problem with respect to the distribution of the costs of health services, and therefore its position with respect to such problems must continue to be a positive and progressive one, and be it further.

Resolved, That as such a positive and progressive step toward the ultimate solution of the problem, the House of Delegates of the California Medical Association hereby proposes the following program, which it believes to be both desirable and feasible under all existing circumstances:

(a) An increase in the benefits of the California Unemployment Insurance Act, without increasing payroll taxes, to provide cash indemnities to wage earners when ill or injured through nonindustrial causes. Such cash indemnities would be primarily used for the payment in whole or in part of incurred hospitalization costs. This proposal is feasible because the present California unemployment benefits and the estimated cost of adding cash indemnities can well be financed within the existing unemployment tax structure.

(b) The California Medical Association is wholeheartedly in favor of the principle of distribution of the costs of medical care by means of prepayment, and its sincerity in this regard is evidenced by its expenditure of no inconsiderable money and effort for the development of California Physicians' Service and that California Physicians' Service has been offering to the public a statewide, nonprofit prepayment plan for the past five and a half years.

The California Medical Association respectfully insists that it is not an informed statement to characterize California Physicians' Service as a "failure because it covers only about 125,000 people." A brief review of its enrolment experience presents a fairer picture of its present status and future prospects. After its administrative organization was ready to operate in 1939, it took three weeks to enroll the first ten members. Rate of enrolment in its first four years averaged about 1,000 per month. Now, with its more advanced "seasoning," with improvement in compensation to doctors, with better public knowledge of and confidence in it, rate of enrolment of new members has risen to approximately 12,000 per month in the last four months of 1944. If it is fair to judge the future by past experience, California Physicians' Service is, just at this time, entering on a period of very rapidly increasing expansion.

The California Medical Association respectfully insists that, instead of characterizing California Physicians' Service as a failure because it covers as yet an insufficient number of people, the state government, management, labor and agriculture should implement and assist California Physicians' Service to attain its objectives.

Such assistance could well be a reduction of the employees' portion of the California unemployment tax for those employees who have joined California Physicians' Service or any other equivalent service. To illustrate this proposal. Under it, an employee enrolling in California Physicians' Service (or in one of the Blue Cross plans) would have a smaller sum deducted from his pay check each month than he would if he failed to join. The amount of this reduction would be small, but its smallness is not important because the existence of any incentive will unquestionably act as a tremendous aid to the growth of voluntary nonprofit plans. It may be claimed that this cannot be done without increasing existing taxes. Therefore the following information is of importance. The present California unemployment tax consists of 3.7 per cent of all payrolls, 2.7 per cent paid by the employer, 1 per cent paid by the employee. This tax fund is collected under the present law for the sole purpose of paying cash benefits to people unemployed through loss of work. Since the inception of the California unemployment system, the benefits paid out have been less than one third of the amount of the taxes collected. Even in prewar years the benefits paid out averaged not over half the taxes collected. Therefore it is apparent that a tax reduction to encourage medical coverage can be added to the Unemployment Act without jeopardizing the solvency of the fund and without adding to the tax burden. California is in an advantageous position in this regard because it is one of the few states that impose a 1 per cent unemployment tax on employees in addition to the 2.7 per cent employers' tax. It is this 1 per cent which has resulted in the California fund becoming extremely large and further results in the feasibility of our suggested plan. For instance, the present surplus is \$621,708,167.89.

(c) A more rigid enforcement by the state of the various existing disease preventive measures and other public health laws should be undertaken. By this means, already at the command of the state, great strides can be made toward the reduction of the incidence of illness and disease. It must not be forgotten that all reductions in the incidence of illness decrease the cost of medical care. Better enforcement of existing preventive measures relating to tuberculosis, contagious diseases and, specifically, venereal diseases would reduce the incidence of these diseases and illustrate this point, and be it further.

Resolved, That recent proposals to establish some form of compulsory health insurance in this state have come at the last minute without any

opportunity for adequate consideration and planning by any of the many interested groups or sufficient time for interchange of opinions and knowledge. Very considerable progress has been made in defining objectives in recent meetings between representatives of the medical profession with the governor and other groups, and it is the belief of your committee that such meeting and further exchange of ideas should be undertaken immediately and continued until a definite conclusion has been reached.

I move the adoption of this resolution as a whole.

It is further suggested that the California Medical Association specifically and immediately invite representatives of the government of the state of California, representatives of business and management interests, representatives of labor, representatives of agricultural organizations, representatives of the dental profession, representatives of hospitals and representatives of allied medical groups to joint conferences for the purpose of arriving at a complete and comprehensive plan to cover the entire problem of health service in California.

I move the adoption of this section of the committee's report.

During the deliberations of the committee, and from the study of the resolutions submitted, the committee has formulated certain basic principles that are inherent in the success of every prepayment plan of health service. These principles are fundamental. They may be enumerated as follows:

1. Absolute freedom of choice of physicians by the patient must be guaranteed.
2. Payments for service rendered must be on the basis of fee for service as opposed to capitation, in payment of the physician.
3. Unhampered medical control of all professional service.

I move the adoption of this section of the committee's report.

Medical Legislation

DISTRICT OF COLUMBIA

Bills Introduced.—S. 127, introduced by Senator Bilbo, Mississippi, and H. R. 317, introduced, by request, by Representative Randolph, West Virginia, propose to amend existing law relating to the registration of births in the District of Columbia. S. 223, introduced by Senator Radcliffe, Maryland, for Senator Tydings, Maryland, provides for the establishment of a modern, adequate and efficient hospital center in the District of Columbia.

MEDICAL BILLS IN CONGRESS

Bills Introduced.—S. 191, introduced by Senator Hill, Alabama, for himself and Senator Burton, Ohio, proposes an appropriation of \$110,000,000 to aid states in surveying their hospital and public health centers and in planning and constructing additional facilities. H. R. 1391, introduced by Representative Miller, Nebraska, proposes to establish a Department of National Health. H. R. 1284, introduced by Representative May, Kentucky, proposes to insure adequate medical care for the armed forces by providing for the registration, selection and induction of nurses. S. 190, introduced by Senator Murray, Montana, proposes to establish a National Institute of Dental Research in the United States Public Health Service to foster and aid in coordinating research relating to dental diseases and conditions. S. 178, introduced by Senator Murdock, Utah, proposes to amend the United States Employees' Compensation Act to permit chiropractors to treat beneficiaries of that act. H. R. 713, introduced by Representative Dickstein, New York, proposes to create in each corps area of the United States, as now constituted, a medical training school for the armed forces and the United States Public Health Service. H. R. 1120, introduced by Representative Murdock, Arizona, proposes that for pension purposes any person who served under contract with the War Department as acting assistant or contract surgeon between April 21, 1898 and Feb. 2, 1901 shall be considered to have been in the active military service of the United States for the period of such contract service between those dates. H. R. 590, introduced by Representative Somers, New York, proposes an appropriation of \$1,500,000 to construct a veterans' hospital in the borough of Brooklyn, city of New York, with a capacity of at least 500 beds. H. R. 611, introduced by Representative Tolan, California, provides for grants to states

for assistance in the rehabilitation of disabled persons incapacitated for normal employment H R 680 introduced by Representative Beckworth, Texas, proposes to amend the Social Security Act so as to provide grants to states for assistance to needy incapacitated individuals H R 686, introduced by Representative Bloom New York, proposes to amend the Federal Food, Drug and Cosmetic Act so as to declare a drug misbranded if it contains any quantity of boric acid or of any other substance which is poisonous when used internally and which is similar in appearance to another drug which is for use internally, unless it bears a label containing the statement "Warning—Poisonous If Used Internally" H R 1210, introduced by Representative Walter, Pennsylvania, proposes an appropriation of \$1 500,000 to construct a veterans' hospital in Pennsylvania, with a capacity of at least 400 beds

STATE MEDICAL LEGISLATION

Indiana

Bill Introduced—S 3, to supplement the medical practice act, authorizes for the duration of the war and eighteen months thereafter the issuance of a license without examination to any person honorably discharged from the armed forces who is a resident of the state, who subsequent to Dec 7 1941 graduated from an accredited medical school, who entered the armed forces before being licensed to practice medicine and who while in the armed forces practiced medicine

Iowa

Bill Introduced—H 15 proposes so to amend the narcotic drug act as to include within its purview isompepaine, which is defined as "the substance identified chemically as 1-methyl-4-phenyl-piperidine-4 carboxylic acid ethyl ester, or any salt thereof, by whatever trade name identified"

Maryland

Bills Introduced—S 61, to amend the law requiring any physician, pharmacist, dentist hospital or nurse in Montgomery, Talbot Somerset and Worcester counties treating any person injured in an automobile accident or by a lethal weapon to report the fact to an appropriate police authority, proposes to make the requirement statewide H 60 proposes to authorize the state board of health to provide without charge for the treatment of persons exposed to hydrophobia The present law authorizes such treatment without charge only for those who are unable to pay the usual charges

Massachusetts

Bills Introduced—S 54 proposes to require a physician subsequent to the performance of an operation to deliver to the patient, or if a minor or an incompetent to the appropriate guardian, a written statement setting forth the nature of the operation performed and the physician's reasons for considering the operation necessary S 69 proposes to enact a separate chiropractic practice act and to create an independent board of registration of chiropractors to examine and license applicants for licenses to practice chiropractic The bill proposes to define the practice of chiropractic as "the science of locating, and removing, by hand only, interference with the transmission or expression of nerve force in the human body, where such interference is indicated or misalignment or subluxations of the vertebral column appear It excludes operative surgery, prescription or use of drugs or medicine, or the practice of obstetrics, except that the x-ray may be used solely for the purposes of examination" S 113 proposes to require every licensed physician annually to submit to an examination and test for syphilis and to display in his office a certificate stating the date and result of the last examination and test to which he submitted H 149 proposes to authorize, on the written application of a licensed physician, the admittance to North Reading State Sanatorium of a child suffering from rheumatic heart disease H 261 proposes to enact a law providing for a so called voluntary system for the payment of cash sickness, bodily injury, hospital, surgical operation and maternity benefits The bill proposes that every person employed in a private industry shall be eligible, unless he elects otherwise, to receive the benefits indicated above from his employer and the employer must

arrange for the payment of such benefits either by taking out an acceptable insurance policy or out of his own funds H 294 proposes to direct the department of mental health to construct and maintain an additional hospital for feebleminded children H 322, to amend the workmen's compensation act, proposes to require an employer to furnish to an injured employee, where necessary, glasses, artificial hearing devices and artificial dentures H 331 proposes to require a physician treating a patient suffering from cancer, sarcoma, leukemia primary tumors of the lymph nodes commonly classed as malignant lymphoma, or other malignant tumor to report to the department of public health the facts within one month after first obtaining knowledge thereof H 412 proposes to prohibit the sale, except on the written prescription of a licensed physician, dentist or veterinarian, of aminopyrine, barbituric acid, cinchophen, dinitrophenol, sulfanilamide and any other drug which has been found under the provisions of the federal food, drug and cosmetic act to be dangerous to health when used in the dosage or with the frequency or duration suggested in its labeling H 414 proposes, in effect, to authorize a chiroprapist or podiatrist to have in his possession any instrument adapted for the use of narcotic drugs by subcutaneous injection H 415, to amend the medical practice act, proposes that any applicant failing to pass an examination for licensure shall be permitted to take only two reexaminations and shall be required to pay an additional fee of three dollars for each reexamination H 416, to amend the medical practice act, proposes to authorize the board of registration in medicine in its discretion before issuing any certificate that has been revoked to require the physician concerned to pass a written examination to test his present fitness to practice

Michigan

Bill Introduced—S 6 proposes to authorize two or more cities, townships or incorporated villages or any combination thereof to incorporate a hospital authority for operating a community hospital

New York

Bills Introduced—S 2 proposes to continue until Feb 15, 1946 the temporary state commission heretofore authorized to survey the general question of medical care and to report its findings and recommendations to the legislature The bill further proposes to enlarge that commission to twelve persons, six of whom are to be licensed physicians, two laymen, one hospital administrator, one hospital nurse and one public health nurse S 60, to amend the medical practice act, proposes to authorize the board of regents to restore a license revoked because the holder thereof was convicted of a felony if the convicted physician receives a certificate of good conduct granted by the board of parole

Oklahoma

Bill Introduced—H 7 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a certificate from a licensed physician that within thirty days prior to the application for a license to marry the party has been given a standard serologic examination for syphilis and that in the opinion of the physician he or she is not infected with syphilis or, if infected, is not in a stage that may be communicable to the prospective marital partner

Society Proceedings

COMING MEETINGS

- Annual Congress on Industrial Health Chicago Feb 13 15 Dr Carl M Peterson, 535 N Dearborn St, Chicago, Secretary
Annual Congress on Medical Education and Licensure Chicago, Feb 12 13 Dr Victor Johnson, 535 N Dearborn St, Chicago, Secretary
Chicago Medical Society Annual Clinical Conference, Chicago, Feb 27 March 1 Dr Warren W Furey, 30 N Michigan Blvd, Chicago 2, Secretary
Midwest Conference on Rehabilitation, Chicago, Feb 12 Dr Henry T Ricketts, University of Chicago, Chicago, Chairman Committee on Arrangements
Society of Surgeons of New Jersey, Jersey City, January 31 Dr Walter B Mount, 21 Plymouth St, Montclair, N J, Secretary
Western Section, American Laryngological Rhinological and Otolological Society, Los Angeles, January 27 28 Dr Aubrey G Rawlins, 384 Post St, San Francisco Chairman

Washington Letter

(From a Special Correspondent)

Jan. 15, 1945.

President Asks National Service Law

Enactment of a National Service Law to meet the manpower crisis was advocated by President Roosevelt in his annual message, read to a joint session of the House and Senate. He asked specifically for speedy passage of legislation to induct nurses and the four million 4-F men. He also urged extended social security, health and education programs. In his domestic program he emphasized (1) adoption of universal military training after the war; (2) full employment after the war, with greatest possible use of private enterprise to provide his promised 60,000,000 jobs; (3) assurance of chances for new small enterprises and business expansion with government guaranteed financing; (4) development of national resources and a large public works program as part of the full employment project; (5) provision of better housing with cooperation of industry, labor and federal, state and local governments; (6) expanded social security health and education programs, and (7) peacetime revision of the present tax structure "to encourage private demand."

Gas "Prescriptions" Used in Capital

So serious is the shortage of gasoline in Washington that certain service stations have been designated specifically to serve only doctors and nurses, who can get gas on submission of their signed "prescriptions." This procedure follows in part recommendations, made when the shortage reached a critical stage, by District of Columbia Coroner A. Magruder McDonald, executive member of the District Medical Society, who called on government officials to (1) earmark part of the city's gasoline allocation for exclusive consumption by doctors, (2) designate certain stations as distributors of this gas and (3) arrange for physicians to get preferential treatment at all stations, including provisions for the purchase of gas at specified hours both day and night. Doctors reported that patients went untreated when they were unable to make calls through lack of transportation.

Thirty-Nine Million Americans Under Social Security Insurance

Acting Federal Security Administrator Watson B. Miller has announced that more than 39,000,000 American men and women have entered 1945 with insured status in the old age and survivors insurance program of the Social Security Act. Under the old age and survivors insurance program, the monthly benefit rolls rose to 1,120,000 men, women and children, eligible to receive \$20,500,000 monthly. Monthly benefit payments were awarded to 324,000 new applicants last year, and lump sum benefit payments were made to 208,000 survivors of insured workers who left no one immediately entitled to monthly benefits. Estimated totals certified for 1944 were \$196,100,000 in monthly benefits and \$22,400,000 in lump sums.

Scientific Roster Helps Medical World

The National Roster of Scientific and Specialized Personnel, which according to Paul V. McNutt, chairman of the War Manpower Commission, has placed approximately 50,000 persons since its founding in June 1940, has been of inestimable help in the medical field, it is revealed here. An example: One company engaged in research on penicillin asked for a mycologist who was a specialist in fungus growth that might prove to be sources of this medicine and other drugs needed for treatment of war wounds. The roster made an intensive search of its records and obtained the employee by the transfer system. Mr. McNutt said that the medical profession had cooperated closely with the Roster.

Induction of "Remediable" 4-Fs Proposed

A conference of interested governmental agencies to study the possibilities of rehabilitating 750,000 4-F draft registrants for military service has been proposed by Senator Claude Pepper, Democrat of Florida, chairman of the Senate Subcommittee on

Wartime Health and Education. He suggested three courses: (1) induction of unessentially employed 4-Fs with remediable defects for corrective treatment at government expense under the Selective Service Administration; (2) expansion, if feasible, of the Army's rehabilitation program; (3) expansion of state rehabilitation programs now operated with federal aid under the Barden-La Follette act. Senator Pepper said that testimony before his subcommittee showed that one sixth of the 4,500,000 4-Fs could be made fit for active service.

Two UNRRA Sanitary Conventions Signed

Two international sanitary conventions facilitating operations of the United Nations Relief and Rehabilitation Administration were signed in Washington this week by Lord Halifax, British ambassador to the United States, Professor André Mayer, medical counselor of the French Provisional Government in the United States, Secretary of State Stettinius, Jan Ciechanowski, Polish ambassador, and Herbert H. Lehman, director general of UNRRA. The conventions concern maritime and aerial travel. They amend the international maritime sanitary convention signed in Paris in 1926 and the international sanitary convention for aerial navigation signed at The Hague in 1933.

Twenty-Eight Million Army Bandages Sold as Dusters

Twenty-eight million U. S. Army first aid dressings were offered for sale by the Treasury Department for use as dust cloths, although the bandages, wrapped separately in containers, are as good as new. The army surgeon general's department explained that the bandages do not conform in size and type with dressings now deemed more efficient. Resale of the bandages for medical use is forbidden under terms of the sales contract, and Treasury spokesmen said they could have "such uses as dust cloths, window wipers and machinery wiping cloths."

Government Appeals for Citizen Cooperation

Uncle Sam today asked his people in this 161st week of the war to help send 10,000 urgently needed army nurses to the fighting front by volunteering as Red Cross nurse's aides and to donate 100,000 pints of blood to meet the quota being flown to wounded men in Europe and the Pacific. Drastic action is already forecast in Congress or by executive action to correct the shortage of nurses for the armed forces. If Congress is asked to legislate, nurses will probably demand that they be given military rank, with benefits enjoyed by the women's services.

Official Notes

NBC RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company are presenting the twelfth consecutive season of nationwide network health broadcasts, which began January 6 and will continue through June 30. The title of the series for 1945 is Doctors Look Ahead. Included in the series are broadcasts relating to wartime and postwar developments, with special emphasis on medical progress of the present day and what it foreshadows for the nation's health in the immediate future.

Topics will be announced weekly in THE JOURNAL and monthly in Hygieia. Fast moving events may, however, cause last minute substitution of topics. Local newspapers should be consulted for announcements of time and stations. The program will be broadcast each Saturday at 4 p. m. Eastern War Time (3 p. m. Central, 2 p. m. Mountain and 1 p. m. Pacific War Time). When conflicts exist with local programs, rebroadcasts may be arranged at hours other than on the network schedule. The following are the topics for January:

January 20, Sulfur Drugs (Dr. Austin Smith).
January 27, Penicillin (Dr. Austin Smith).
February 3, Social Hygiene.

The broadcast will be under the supervision of the Bureau of Health Education, whose director, Dr. W. W. Bauer, will summarize each program except when other speakers are announced.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

DELAWARE

Personal.—Dr. Mary Putnam, field physician of the Wisconsin State Board of Health, has been appointed pediatrician to the Delaware State Board of Health to direct the baby clinics carried on by the board in the state each month and to handle several crippled children's clinics. Dr. Putnam succeeds Dr. Marion S. S. Dressler, resigned.

DISTRICT OF COLUMBIA

Hospital News.—Ground was broken December 18 for the new Georgetown University Hospital, which is expected to be completed in January 1946. The building will contain 400 beds and be constructed at a cost of \$2,420,000. The Federal Works Agency has allotted \$1,820,000 toward the cost.

New Health Council.—The Washington Metropolitan Health Council was recently created under the sponsorship of the health division of the Council of Social Agencies. One of its first activities will be a comprehensive survey of health and hospital facilities in Washington. Admiral Ross T. McIntire, Surgeon General of the Navy, is chairman of the survey committee. Dr. Herbert P. Ranisey is head of the health division of the Council of Social Agencies.

Plan to Form Diabetic Association.—The executive board of the Medical Society of the District of Columbia and the committee on public health recently adopted recommendations sent to them by a group of physicians asking for an educational and preventive medicine program for the diabetic patients in Washington. According to *Medical Annals* it is proposed that statistics from all possible sources about the diabetic in Washington be gathered preliminary to the formation of a diabetic association, the object of which would be the education of the diabetic patient, physicians, nurses, dietitians, and others interested in diabetes. When the statistical data have been analyzed, announcement will be made concerning the formation of the proposed diabetic association.

IDAHO

Society News.—The Idaho Hospital Association held its annual meeting at the Owyhee Hotel, Boise, Dec. 9, 1944, at which 22 delegates represented ten hospitals. Mrs. Helen B. Ross, St. Luke's Hospital, Boise, was elected president and Nelson Ammons, business manager of Samaritan Hospital, Nampa, was chosen secretary-treasurer.

Hospital News.—The Gooding Chamber of Commerce is sponsoring a plan to enlarge the Gooding County Hospital, proposing to increase its capacity from 16 to 40 beds. Other changes will bring the proposed cost to about \$50,000. Funds have been collected and a site chosen for a new hospital at Jerome, to be located on the Shepherd estate on North Lincoln Avenue and to cost about \$100,000, according to *Northwest Medicine*.

ILLINOIS

New Chief of Maternal and Child Hygiene.—Dr. Henrietta M. Herbolzheimer has been appointed chief of the division of maternal and child hygiene in the state department of public health, effective January 1. During the previous six months she filled this position as acting chief, after having been promoted from a staff position which she had held since May 1942 (*THE JOURNAL*, July 22, 1944, p. 858).

Chicago

Francis Blake to Discuss Penicillin.—Dr. Francis G. Blake, dean, professor and head of the department of medicine, Yale University School of Medicine, New Haven, will discuss "Three Years' Experience with Penicillin Therapy" at a meeting of the North Side branch of the Chicago Medical Society in the Drake Hotel, February 1.

Society of Bacteriologists.—The Society of Illinois Bacteriologists will be addressed at the Museum of Science and Industry, February 9, by:

Dr. Katharine M. Howell and Elta Knowl, B.S., Studies on *Dientameba Fragilis* and Its Incidence and Possible Pathogenicity.
Werner Baumgarten, Ph.D., Peoria, Ill., Microbiologic Determination of Amino Acids.

Dr. Israel Davidsohn, The Rh Factor and Its Practical Applications.

Colonel Rusk to Give Billings Lecture.—Col. Howard A. Rusk, M. C., chief, convalescent training division, Office of the Air Surgeon, will deliver the sixth Frank Billings Lecture of the Thomas Lewis Gilmer Foundation of the Institute of Medicine of Chicago in the Grand Ball Room of the Drake Hotel, February 12. His subject will be "Rehabilitation—The Challenge to American Medicine." The lecture will be a feature of the institute's midwest conference on rehabilitation.

Orthopedic Meeting.—On January 19 the Chicago Orthopaedic Society was addressed at the Palmer House by Drs. Allen F. Voshell, Baltimore, on "Some Clinical Implications Based on Internal Knee Joint Anatomy"; Le Roy C. Abbott, San Francisco, "Surgical Approaches to the Knee Joint," and Guy A. Caldwell, New Orleans, "Factors Concerned in Delayed Healing of Wounds." Other speakers on the program included Drs. James S. Speed, Memphis, Tenn., and Joseph A. Freiberg, Cincinnati.

Prevalence of Ringworm.—The Chicago Board of Health is conducting a survey to determine the number of children in Chicago affected with ringworm, because of the indications that the disease among children of all ages up to 14 seems in some places to be reaching epidemic proportions. The reports indicate that the disease has affected six times as many boys as girls. In a release to the press, Dr. Herman N. Bundesen, president of the board of health, stated that the spread of the disease is apparently associated with many factors related to the war, such as overcrowding, increased travel and neglect resulting from increased employment and responsibilities of parents. The release stated that in other communities such as New York, St. Louis, Flint, Mich., and Pittsburgh the following suggestions have been made to combat the spread of the infection, among other measures:

Routine examination of the scalp of all children, by using a special type of light which makes the disorder at once apparent.

Insistence on the wearing of a protective paper or cloth cap by the children infected until cured.

Avoidance of exposure, particularly of the back of the head, to the backs of seats much used by other children, as in all places of public assemblage.

Efficient medical treatment of every infected child until pronounced free from infection.

MASSACHUSETTS

License Revoked.—The state board of registration in medicine on November 17 revoked the license of Dr. Samuel Greenstein, Dorchester and Boston, because "of gross misconduct in the practice of his profession as shown by collusion."

Double Anniversary in Massachusetts Health.—On December 6 the Massachusetts Department of Public Health observed the seventy-fifth anniversary of its establishment and the fiftieth anniversary of the establishment of its state antitoxin laboratories. In 1869 the Massachusetts legislature passed an act to establish a state board of health, the first in America. The anniversary program includes a morning session at the Peter Bent Brigham Hospital, Boston, a buffet luncheon at the antitoxin laboratory, afternoon and evening meetings at Ford Hall and dinner at the Parker House.

Changes in Health Personnel.—Dr. George E. Perkins, Boston, has been appointed acting director of the division of venereal diseases of the Massachusetts Department of Public Health to succeed John B. Hozier, P. A. Surg., U. S. Public Health Service, who has been recalled to Washington. Dr. Perkins served as lieutenant colonel in the medical corps of the army until his retirement in November. Prior to his retirement he was a medical consultant with the rating boards under the Veterans Administration, serving in this capacity at the Bronx, New York; Atlanta, Ga., and Togus, Maine. Dr. James W. Knepp, formerly post medical inspector at Camp Edwards with the rank of lieutenant colonel in the army, has been appointed health officer of the Worcester district of the state department of health. Dr. Knepp has retired from the army.

MINNESOTA

Tenth County Accredited for Tuberculosis Control.—Jackson County is the tenth county in the state to be credited for the control of human tuberculosis. Accreditation ceremonies were held in Jackson November 16. The certification indicates that the county has met the minimum requirements of the state department of health and the Minnesota State Medical Association for the control of tuberculosis.

Directorship of Health Education Created.—D. Clare Gates, Dr.P.H., has been appointed to a newly created position of director of health education in the Minneapolis City Health Department, according to Dr. Frank J. Hill, health commissioner. Although the civil service appointment began January 1, Dr. Gates has filled the position since November 1 through a financial grant from the Hennepin County Tuberculosis Association. Dr. Gates received his degree in public health at the University of Michigan in 1937.

School of Public Health at Minnesota.—The regents of the University of Minnesota Medical School, Minneapolis, recently changed the status of the department of preventive medicine and public health to the School of Public Health. The change was made to give proper recognition to a department which has been for a number of years offering professional training in public health for physicians, engineers and nurses and more recently for health educators. The School of Public Health will continue to function as an integral part of the medical school and the university Division of Medical Sciences. A building program planned at the university eventually will include a separate unit for the School of Public Health (*THE JOURNAL*, January 13, p. 111). Dr. Gaylord W. Anderson, professor and head of the department of preventive medicine and public health, on leave of absence as lieutenant colonel, medical corps, Army of the United States, and chief of the division of medical intelligence, Office of the Surgeon General, has been named director of the new School of Public Health. On January 2 Dr. Haven Emerson, New York, returned to the medical school as visiting professor of public health to serve, according to present plans, for the year 1945. During the leave of Dr. Anderson, Dr. Emerson has served in a similar capacity.

NEBRASKA

New Officers of Clinical Society.—At the annual meeting of the Omaha Mid-West Clinical Society, December 11, Dr. Joseph D. McCarthy was chosen president-elect and Dr. J. Jay Keegan was installed as president. Dr. Roy W. Fouts was elected secretary, and director of clinics and Dr. John M. Thomas assistant secretary.

NEW JERSEY

Unit for Children with Chronic Heart Disease.—The Hospital and Home for Crippled Children, Newark, recently opened a wing as a separate unit for the care of children crippled with heart disease.

Personal.—Clarence T. Van Meter, Ph.D., assistant professor of chemistry and physics at the school of pharmacy of the University of Pittsburgh, has become scientific director of the physiologic laboratories of Reed and Carnrick, Jersey City, according to *Science*.

Society of Surgeons.—The annual meeting of the Society of Surgeons of New Jersey will be held in Jersey City, January 31, at the Jersey City Hospital. Among the speakers will be:

- Dr. Frank Bortone, Jersey City, Esophageal Diverticula.
- Dr. Louis C. Lange, Weehawken, Gallstone Ileus and Internal Biliary Fistulas.
- Dr. Earl J. Halligan, Jersey City, Treatment of the Remaining Common Duct Stone.
- Dr. Edgar Burke, Jersey City, Case Presentations of Unusual Surgical Interest.
- Dr. Edward G. Waters, Jersey City, Presacral Sympathectomy for Functional Uterine Pain—Its Selective Usefulness.
- Dr. Stanley R. Woodruff, Jersey City, Surgical Treatment of Urinary Incontinence in Certain Congenital Anomalies.
- Dr. Samuel A. Cosgrove and Leon C. Chesley, Ph.D., Jersey City, Management of the late Pregnancy Toxemias.
- Dr. Walter B. Mount, Montclair, Certain Trends in Obstetric Forceps.

NEW YORK

William D. Coolidge Retires.—On December 31 Dr. William D. Coolidge, who has an honorary degree of doctor of medicine from the University of Zurich, retired as vice president and director of research in the General Electric Company, Schenectady. Dr. Coolidge was born in Hudson, Mass., Oct. 23, 1873. He received his B.S. from the Massachusetts Institute of Technology and his Ph.D. from the University of Leipzig in 1899. The honorary M.D. was given to him by Zurich in 1937. He is a fellow of the American Association for the Advancement of Science and an honorary member of a number of roentgen ray societies. Chauncey G. Suits, D.Sc., assistant to the director of research, has been elected a vice president of the company and has been placed in charge of the research laboratory.

New York City

University News.—Columbia University College of Physicians and Surgeons has received a grant of \$14,500 from the Commonwealth Fund of New York to be applied to the study of respiratory physiology in the department of medicine.

Dr. Napier Named Visiting Professor of Tropical Medicine.—Dr. L. Everard Napier, formerly director of the School of Tropical Medicine of Calcutta, India, has been appointed visiting professor of tropical medicine at the New York University College of Medicine for the months of Jan-

uary and February of 1945. This has been made possible by a grant received from the Commonwealth Fund. During this time Dr. Napier will give several special lectures to the faculty and student body and will hold conferences with students.

New York Medicine.—On January 5 *New York Medicine* made its appearance, supplanting the *Journal of the Medical Society of the County of New York*. The bulletin will be published on the 5th and the 20th of each month throughout the year and will have the subtitle "Official Bulletin of the Medical Society of the County of New York." An announcement indicates that in general the editorial policy of the journal will be maintained without spectacular alteration, but it is planned to develop gradually a working editorial board representative of various aspects and institutions of medical practice.

Health in New York City.—In 1944 the general death rate for New York City was 10.3 per thousand of population as compared with 10.9 in 1943. This rate compares with the record low of 9.9 for the year 1941. The city registered its lowest maternal mortality rate in 1944 (1.8 per thousand live births) as against a rate of 2.2 for 1943. New low death rates were also recorded for tuberculosis, which totaled 3,533 deaths in 1944, appendicitis, whooping cough, automobile accidents, other accidents and suicides. The infant mortality rate showed an increase for the second consecutive year from 30.2 per thousand live births in 1943 to 31.2 in 1944. There were 7 deaths from diphtheria in 1944 as against 16 in 1943, with the total number of cases from this disease constituting an all time low mark of 242.

OHIO

The Offices of Doctors in Service.—The *Bulletin of the Toledo Academy of Medicine* recently praised the action of a number of Toledo building managers for their way of handling the offices of physicians until their return from military service. Many of the buildings are holding doctors' offices until they return from the service. In some cases offices have been locked and the equipment left intact. Some managers charge a nominal rental and others none at all. The council of the Toledo Academy of Medicine at a recent meeting voted to express its appreciation to these building managers for the splendid cooperation they have given to physicians.

New Cancer Project at Western Reserve.—With gifts of about \$15,000, a new cancer research project will be launched at Western Reserve University School of Medicine, Cleveland, to investigate the curative properties of a serum evolved by Dr. Alexander A. Bogomolets, director of the institute of experimental biology and pathology in the Soviet Union. The work will be carried out under the direction of Dr. Harry Goldblatt, associate director of the institute of pathology at the medical school, who, with Enrique E. Ecker, Ph.D., professor of immunology, has been interested in the serum. Of the funds, \$4,000 has been obtained from the Herbert Jules Goodman Foundation created by Mr. and Mrs. Harry Kirtz and Mr. and Mrs. Jules A. Goodman of Cleveland. Herbert Jules Goodman, Mrs. Kirtz's only child, died of cancer on Feb. 4, 1944. To the fund for this work, initiated by the Herbert Jules Goodman Foundation, the Elizabeth Severance Prentiss Foundation has added \$4,000, the Field Army of the American Cancer Society is donating \$3,000, the Cleveland Foundation \$1,000 and the Louis D. Beaumont Trust \$1,000. The Field Army plans to raise \$2,000 more. Dr. Bogomolets, in his description of the serum in the *American Review of Soviet Medicine*, December 1943, claimed that the serum is effective not only against cancer but against high blood pressure and arthritis, claiming that it increases the power of the body to fight off infectious disease and promote wound healing and that it will even prolong life. Dr. Goldblatt's interest stemmed from his work on high blood pressure and his interest in cancer and Dr. Ecker because of his research in the role of blood complement in resisting infection. In a release to the press it was stated that similar work is now being conducted at the Cedars of Lebanon Hospital, Los Angeles, under the direction of Dr. Reuben K. Straus, formerly chief pathologist in the coroner's office of Cuyahoga County, Cleveland, and a former student of Dr. Goldblatt.

PENNSYLVANIA

Philip Woodbridge Joins Reading Hospital.—Dr. Philip D. Woodbridge has resigned as professor and head of the department of anesthesiology, Temple University School of Medicine and Hospital, effective January 6, to become head of the department of anesthesiology at the Reading Hospital, Reading. The new appointment was to be effective about January 16.

Philadelphia

Fifty Years of Medicine.—On January 9 the following members of the Philadelphia County Medical Society were given certificates by the Medical Society of the State of Pennsylvania testifying to the completion of fifty years in the practice of medicine:

Dr. Miriam M. Butt	Dr. W. Hersey Thomas
Dr. Irving W. Hollingshead	Dr. Frederick J. Voss
Dr. Harry A. Shute	Dr. George B. Wood
	Dr. William S. Wray

These physicians, in addition to a number of others (THE JOURNAL, Dec. 30, 1944, p. 1160), were guests at a councilor district luncheon meeting at the Philadelphia County Medical Society.

Pittsburgh

Personal.—Dr. William S. McEllroy, dean of the University of Pittsburgh School of Medicine, has been appointed medical survey adviser to succeed Dr. Charles R. Reynolds, Chicago.

Frederick Fagler Named Secretary of Allegheny County.—Mr. Frederick W. Fagler on January 1 became executive secretary of the Allegheny County Medical Society. Mr. Fagler was formerly assistant sales manager of the Hotel Statler Company, Inc., and has been located for the last three years at the William Penn Hotel, Pittsburgh. He fills the vacancy that occurred when Dr. George R. Harris resigned (THE JOURNAL, Aug. 12, 1944, p. 1050).

Daniel Braun Named to Head New Department.—Dr. Daniel C. Braun, Mount Lebanon, since September 1938 medical examiner for the Pittsburgh Coal Company, has been appointed medical director of the company's newly created department of industrial medicine. The new unit was organized to provide better supervision of the health of company employees and research into medical problems peculiar to coal mining. Dr. Braun graduated at the University of Pittsburgh School of Medicine in 1937. He took postgraduate work in industrial hygiene at Pittsburgh in 1941 and the Long Island College of Medicine, Brooklyn, in 1942 and participated in special classes sponsored by the Allegheny County Medical Society the same year.

TENNESSEE

Medical School Graduates in Second Generation at Vanderbilt.—One fourth of the recent 52 graduates of Vanderbilt University School of Medicine, Nashville, were in the "Vanderbilt Tradition," 13 were second generation "Vanderbilters" and 2 of these were grandsons of Vanderbilt alumni.

WISCONSIN

Dr. William Beaumont Memorial Foundation.—A brochure on the career of Dr. William Beaumont has been released by the memorial foundation created in 1943 (THE JOURNAL, Oct. 2, 1943, p. 297) to honor the physiologist. The pages show the officers and personnel of the foundation and contain illustrations and historical material to memorialize Dr. Beaumont. The booklet is available on request to the Dr. William Beaumont Memorial Foundation, Prairie Du Chien.

Research for Penicillin.—The University of Wisconsin, Madison, is sponsoring research on penicillin in three of its departments, biochemistry, agricultural bacteriology and botany. The work is being carried out under the auspices of the Office of Production Research and Development of the War Production Board and is in addition supported by grants from various companies which produce penicillin, including the Heyden Chemical Corporation, New York, which has contributed \$4,400, and Lederle Laboratories, Inc., Pearl River, N. Y., which has contributed \$4,800. Funds have also been given by the Wisconsin Alumni Research Foundation, according to Science.

GENERAL

Special Society Election.—Dr. William G. Lennox, Children's Hospital, 300 Longwood Avenue, Boston, is president of the Association for Research in Nervous and Mental Diseases, which held its annual meeting in New York December 16. Other officers include Drs. H. Houston Merritt, Boston, and Wilder G. Penfield, Montreal, Que., vice presidents, and Thomas E. Bamford Jr., New York, secretary-treasurer. The society agreed to devote its program for its 1945 session to the subject of epilepsy and convulsive disorders.

Physician Swindled.—A physician in Newport, Ky., recently announced that he had not received delivery on an order for which he gave part payment to a so-called representative of the Manhattan Manufacturing Company, Chicago. On inquiry to the company the physician was told that it had no salesman using the name of L. H. Lancaster which appears

on the receipt and that presumably the impostor was one who had been employing a similar swindle in Western states. The company states that an authorized representative would have official order books and not a blank form on which any company's name could be written.

March of Dimes.—The 1945 March of Dimes was officially opened January 14 with a special coast to coast broadcast made by Mr. Basil O'Connor, president of the National Foundation for Infantile Paralysis, and J. Harold Ryan, president, National Association of Broadcasters, and also chairman of the national radio division of the March of Dimes. The appeal for funds will be climaxed by birthday parties and other celebrations on President Roosevelt's birthday, January 30, and will conclude January 31. For the first time the initial rally of the March of Dimes drive in New York City was a national affair, the program taking place at the Rockefeller Center, January 15. Other features incident to the annual campaign for funds was a specially dramatized broadcast of the infantile paralysis epidemic in North Carolina this past summer.

Physician Wins Prize for Work on "The Doctor's Job."—Dr. Carl A. L. Binger, assistant professor of clinical medicine (psychiatry), Cornell University Medical College, New York, is the recipient of the first Norton Medical Award of \$3,500 offered to encourage the writing of books on medicine and the medical profession for the layman. The title of Dr. Binger's book is "The Doctor's Job," which will be published March 26. The book undertakes to put the lay public in living touch with the medical world as it exists today. Dr. Binger graduated at Harvard Medical School, Boston, in 1914 and served for a time with the Rockefeller Institute for Medical Research. W. W. Norton & Company, sponsors of the prize, announces that a similar award is again offered for a book to be published in 1946. Further details may be obtained from the W. W. Norton & Company, Inc., Medical Award, 70 Fifth Avenue, New York 11.

Ella Sachs Plotz Foundation.—The twenty-first annual report of the Ella Sachs Plotz Foundation for the Advancement of Scientific Investigation indicates that of the twenty-seven applications for grants received during the year nineteen came from the United States, the other eight coming from five different countries in Europe, Asia and South America. During its twenty-one years the foundation has made 508 grants to scientists throughout the world. Applications for grants to be held during the year 1945-1946 must be received by the executive committee before April 1945. There are no formal application blanks, but letters asking for aid must give definitely the qualifications of the investigator, an accurate description of the research, the size of the grant requested and the specific use of the money to be expended. In their requests for aid, applicants should state whether or not they have approached other foundations for financial assistance. Applications should be sent to Dr. Joseph C. Aub, Massachusetts General Hospital, Fruit Street, Boston 14.

Planned Parenthood Meeting.—"Responsibility for the Health of Tomorrow's Family" will be the theme of the twenty-fourth annual dinner meeting of the Planned Parenthood Federation of America at the Waldorf-Astoria, New York, January 24. The speakers will be Ralph C. Williams, assistant surgeon general in charge of the Bureau of Medical Services, U. S. Public Health Service; Lieut. Col. Roy R. Grinker, M. C., and Dr. Edward A. Schumann, Philadelphia. At a luncheon of other agencies January 23 "The Future of the American Family" will be the subject of a symposium at which Mrs. Franklin D. Roosevelt will be the speaker. Topics for discussion at other sessions will be "Summing Up a Year's Work," "How to Achieve Teamwork Between Board Members and Staff," "Organizing and Interpreting Planned Parenthood into Effective Action," "Applying Tested Principles in Interpreting Planned Parenthood to Professional Groups," "To the Medical Profession," "To Clergymen," "Steps Toward Increasing Negro Participation," "Interpreting Planned Parenthood to the Everyday Citizen" and "How to Obtain Financial Support to Put Our Programs into Action."

National Sanitation Foundation Organized.—The creation of the National Sanitation Foundation was announced on January 2. Henry F. Vaughan, Dr. P.H., dean of the School of Public Health of the University of Michigan, will serve as president of the new foundation, which has been chartered in Michigan with headquarters at the School of Public Health, Ann Arbor, to promote progress and betterment in environmental sanitation, health and education. The foundation will be concerned with the advancement of scientific research, experiments, demonstrations, evaluations and the practical application of new and coordinated knowledge in the field of

environmental sanitation. Studies in food sanitation and food handling technics will receive early consideration. Selected studies sponsored by colleges, universities and public health agencies and departments of federal, state and local governments will receive material aid. The work of the foundation is financed by gifts and contributions from manufacturers, distributors and other individuals and groups interested in the promotion of environmental health. The officers of the foundation, in addition to Dr. Vaughan, who is president, are Nathan Sinai, Dr.P.H., professor of hygiene and public health at the University of Michigan, vice president, and Walter F. Snyder, former chief of the bureau of sanitation of the Toledo, Ohio, health division, executive director.

National Conference on Medical Service.—"Distribution of Medical Care" will be the theme of the National Conference on Medical Service during its meeting in the Palmer House, Chicago, February 11. Dr. Chauncey L. Palmer, Pittsburgh, will deliver the presidential address on "Medicine and the National Crisis." Other speakers will be:

Walter P. Reuther, vice president, United Automobile Workers, C. I. O., Detroit, What Labor Expects from Medicine.

Roger B. Corbett, Ph.D., executive secretary, American Farm Bureau Federation, Chicago, What the Farmer Expects from Medicine.

Harlan S. Don Carlos, manager, life, accident and group claim department, Travelers Insurance Company, Hartford, Conn., What the Insurance Man Expects from Medicine.

Hon. A. L. Miller, Washington, D. C., Congressman from Fourth District, Nebraska, The Miller Bills and Medical Legislation by Congress.

Dr. John H. Fitzgibbon, Portland, Ore., Public Relations Program of the American Medical Association.

Lieut. Col. Harold C. Lenth, M. C., Changes in Attitude of Medical Officers Toward Medical Education and Practice.

There will be an open discussion on prepayment of medical insurance plans with Dr. Creighton Barker, secretary, Connecticut State Medical Society, New Haven, acting as the moderator.

LATIN AMERICA

Health Activities in Latin America.—*Tuberculosis in Haiti.*—The Bulletin of the National Tuberculosis Association points out that 1,500 x-ray examinations and fluoroscopies in Haiti show that an average of 19 per cent of persons with positive skin reaction show tuberculous lesions, active or inactive. The National Antituberculosis League (THE JOURNAL, Dec. 10, 1944, p. 1042) was organized to assist in improving the situation. It is a private organization recognized by official agencies and supported by the country as a whole and by the government. In the recent first antituberculosis week \$35,000 was raised by popular subscription, which helped defray the new \$32,000 100 bed sanatorium, for which twelve doctors and ten nurses have been trained to work there and in the clinics.

Personal.—Reuben L. Kahn, Sc.D., Ann Arbor, Mich., discoverer of the Kahn test for syphilis, announced to the press in Puerto Rico recently that he is working on a new test that seeks to discover latent malaria in soldiers in tropical war zones that may prevent their being returned home with the disease undetected. Dr. Kahn also disclosed that he is in Puerto Rico to aid health officers in one of the problems that obstruct work toward suppression of venereal disease. Dr. Kahn will be in Puerto Rico several days through the cooperation of the Anglo-American Caribbean Commission.—Dr. Emmanuel Dias of the Instituto Oswaldo Cruz, Rio de Janeiro, is in charge of the first experimental station for the prevention of Chagas' disease in South America. The station is in Banbui, west of Minas Gerais. In the six months during which the station has been operating, nearly 15,000 triatomines have been captured or killed. *Tropical Medicine News* states that all kinds of insecticides are being tested and that pyrethrum and DDT seem to be the most satisfactory.

Decrease in Malaria.—Nicaraguan health authorities say the malaria index is lower this year than in the last twenty years because of the sanitation work conducted by Nicaraguan and United States health authorities, the New York Times reported.

FOREIGN

Nuffield Grant for Industrial Health.—The trustees of the Nuffield Foundation have offered the universities of Durham, Glasgow and Manchester grants totaling \$600,000 to carry out schemes which they have submitted for the development, as soon as suitable staffs can be appointed, of teaching and research in industrial health. These grants will be spread over a ten year period.

Conway Evans Prize.—Sir Thomas Lewis, physician, University Hospital, has been awarded the Conway Evans prize by the Royal Society and the Royal College of Physicians in recognition of his contribution to medical knowledge

on the normal and abnormal mechanisms of the heart and circulation of the blood. This prize, in accordance with the will of the late Dr. Conway Evans, who was medical officer for the Strand district, is awarded from time to time for scientific work of distinction. According to the *British Medical Journal* it was given first to Sir Charles S. Sherrington in 1927 and then to the late Dr. John S. Haldane in 1933 and to Sir Frederick Gowland Hopkins in 1938.

Alcohol Production in Diabetes.—A report on the investigations of Dr. Jakob W. S. Möllerström, department for metabolic research at the Wenner-Gren Institute of Stockholm, reveals that a certain amount of free alcohol is always present in the blood of a diabetic person, who is consequently more or less intoxicated. In his investigations into the different methods employed to measure the content of alcohol in the blood, which are used by the police in examining persons involved in traffic accidents, he found that two standard methods used, when applied to a case of manifest diabetes, gave figures which varied between 0.035 and 0.5 per cent. According to Dr. Möllerström the reason seems to be that the alcohol generated by the body is mostly bound to certain albumins and is therefore in part undemonstrable through analysis by the standard methods. It is known that the blood of a person with diabetes contains so-called acetone bodies, which influence the result of the alcohol analysis. The presence of such bodies can be determined by specific examination, and a certain allowance is made in cases in which they appear. Dr. Möllerström now definitely asserts that the human body can produce considerable quantities of alcohol even though such bodies are not found in the blood of the patient. The discovery appears to be a very important one, both for the treatment of diabetes and for the legislation concerning alcohol consumption in connection with traffic accidents. A person may present a percentage of alcohol which would be high enough to have him punished for abuse of alcohol, whereas in actual fact he may be suffering from diabetes.

CORRECTION

Washington Letter.—The remarks of Brig. Gen. James S. Simmons, Dr. Lewis H. Weed and other medical authorities under "Importance of Postwar Research Stressed" in the Washington Letter (THE JOURNAL, Dec. 23, 1944, p. 1093) should have been assigned to testimony before the Senate Committee on Wartime Health and Education rather than to the Kelley subcommittee.

Government Services

National Program of Maternal and Child Health Services

Dr. Martha M. Eliot, associate chief of the Children's Bureau, Department of Labor, reported on January 7 that seventy physicians and professional workers, meeting in Washington as an advisory committee to the Children's Bureau, had endorsed "a nationwide survey of personnel and facilities needed to assure health services to all mothers and children, which will be undertaken by the American Academy of Pediatrics, with the help of the Children's Bureau and the U. S. Public Health Service." Chairmen of the advisory committee were Dr. Nicholson J. Eastman, professor of obstetrics at the Johns Hopkins University School of Medicine, Baltimore, and Dr. Henry F. Helmholz, head of the pediatric section of the Mayo Clinic, Rochester, Minn. The plan would tie in closely with the postwar "health center" network recommended by the Pepper subcommittee on wartime health and education and would establish for each state statistics on distribution of children in rural and urban areas; number and distribution of pediatricians and number of general practitioners graduated since 1930; number of hospital facilities, health centers, antepartum clinics and well child conferences already established and the method and rate of pay of professional personnel in these services; number of county and district health departments; the status of public health and pediatric nursing; provisions for social services to make curative care available, and status of school health services. The advisory committee on maternal child health set up as its aim "a long-term program directed at lowering maternal and child mortality and morbidity to an irreducible minimum" and advocated "the delivery of all women in good hospitals under the care of competent physicians."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 16, 1944.

The British Medical Association and the Government Health Service

The annual representative meeting of the British Medical Association is described by the *British Medical Journal* as one of the most momentous in its history. For four days nearly 270 representatives from all parts of the British Isles discussed the government's White Paper for a comprehensive medical service for the whole population. Three hundred and seventy separate motions were debated. These all consisted of objections to various proposals in the White Paper, and in general they were carried. But those which involved rejection of the whole scheme were not carried; it was decided instead to negotiate with the government. The negotiators were to press for the best service which could be established. A comprehensive medical service should be available to all who need it, the sense of the resolutions held, but it is unnecessary for the state to provide for those who are willing and able to provide it for themselves. Every man, woman and child should be able to rely on getting all the treatment and cure that may be needed. But grave concern was expressed at the proposals to place the administration of the service under the Ministry of Health and local authorities, and a demand was made for a thorough and impartial inquiry into the proposed administrative structure. Any interference of government in the doctor-patient relationship would be resisted, the representatives declared. Local authorities were totally unsuitable for the control of medical matters, it was emphasized. In the event of the establishment of advisory councils, the meeting was in favor of a single local health service council in each administrative area representing all branches of medical and ancillary services.

Dr. H. Guy Dain, chairman of the council of the British Medical Association, summed up as follows: "During these last three days we have expressed ourselves in favor of the development of medical services. We have disapproved of the White Paper as it stands. We have preferred the service to proceed by evolution from the present national health insurance, placing first the development of the hospital system and then the extension of general practitioner services. We emphatically do not wish to be employed by local authorities. There should be no civil direction. There should be no whole time salaried service for general practitioners. We will have no clinical control." Dr. Dain asked for final approval of these conditions, and it was unanimously given.

Health of the Nation During the War

In a broadcast address Sir William Jameson, chief medical officer to the Ministry of Health, said that after five years of war he had a good story to tell. The most sensitive index of a nation's general health is probably the proportion of infants dying in their first year, Sir William stated. In the last war, he said, this index rose steadily, but during the past three years it has declined steadily and last year was the lowest on record. In the first month of life a new low death rate record was established, and for the stillborn the rate was only three fourths that of five years ago. The death rates for children up to 10 years of age were also the lowest on record last year, as was the puerperal death rate, it was reported. Finally the birth rate has been rising since 1942 and was now the highest for fifteen years. Factors in this improvement, according to Sir William, were the national milk scheme, vitamin supplements for mothers and young children and the great extension of schemes for school meals and milk in

schools. Full employment and higher purchasing power in many families doubtless also played a part, as well as careful planning of the restricted food supply. We also had the advantage of the system of maternal and child welfare so steadily developed by the local authorities in the twenty years between the two wars. Some of the priorities, such as milk for mothers and children, have been given at the expense of adults. But civilians at all ages were living at least as long as they did in peacetime, and the figures included deaths due to air raids, it was emphasized.

So far we have escaped any serious epidemic during the war. We had an outbreak of influenza in November and December of last year, but it was less severe than the last peacetime epidemic of 1937. Typhoid reached a new low level, and diphtheria was fast coming under control. But there are still the two black spots tuberculosis and venereal diseases. There was an increase in the number of cases of tuberculosis, but the number of deaths from all forms was almost exactly the same as in the last prewar year of 1938, the best year we ever had. Syphilis showed an increase of 139 per cent over 1939. It is encouraging, however, the report stated, that we no longer shut our eyes to this social plague, refuse to discuss it and withhold information about its dangers. This educational program has been welcomed by the vast majority of the public. It has been launched by broadcasting, the press, films, posters and leaflets.

Red Cross Aid to Russia

Speaking at a Red Cross meeting in London, Mrs. Churchill announced that her Aid to Russia Fund now totaled \$30,000,000 and that some 13,000 tons of medical supplies had been shipped. "No convoy which goes on the northern route," she said, "goes without some of our supplies."

BELGIUM

(From Our Regular Correspondent)

Dec. 15, 1944.

American-Belgian Lectures

The bonds of friendship and comradeship between American and Belgian physicians have been more and more strengthened since the arrival of the American Army. On the grounds of this mutual affection and as a result of the proposal of various colleagues (especially Colonels Baehman and Brodtkin of the 15th General Hospital) to organize an international medical body, the International Committee of Military Medicine was recently appointed. The members of the committee resolved to organize medical lectures, to which all the physicians of the region are invited. The first lecture of a series was held on November 3. Colonel Bachman presided. Colonel Voncken, who is general secretary of the International Committee of Military Medicine, congratulated the committee for its organization as well as for having General Reynolds of the Service of Health of the American Army as its president. Topics of the lectures which have been held up to now are "Penicillin in War Surgery," by Colonel Brodtkin; "Therapy of Shock," by Captain Lewy; "Radiotherapy in Basedow's Disease," by Professor Brull, and "Exhaustion of Soldiers After Battle," by Captain Stellar. These lectures are published in the *Bulletin International des Services de Santé des Armées*.

Gastrointestinal Ulcer in Wartime

Some gastroenterologists do not believe in a relation between the conditions created by war and an increase in the development of gastrointestinal ulcers and the aggravation of the symptoms. That this relation seems to exist is indicated by the increased frequency of the disease and the aggravation of symptoms in European countries. Dr. Dauwe in an original article and Dr. N. L. Dumont-Ruyters in an article which was published in *Le Scalpel* arrive at similar conclusions which sup-

port the existence of such a relationship. The sudden increase in the number of cases during the last six months of 1940 excludes the possibility of a progressive increase independent of conditions created by war, they say. One can affirm that these conditions brought about a great frequency in the aggravation of symptoms and an increased number of new cases, it is held. Regardless of the various pathogenic theories about ulcers, it is a fact that several complicated factors play a role when acting on favorable terrain. The authors believe that certain exogenic factors such as smoking and drinking either alcohol or coffee, which in peacetime are considered to be causal factors, are of secondary importance in wartime, during which the mental factors (nervous shock, worry from either material or moral losses) and the influence of these factors on the vagosympathetic balance are the causal factors of main importance.

Gastrointestinal ulcers in peacetime are more frequent in men than in women. However, it is pointed out that in the course of the present war the percentage of gastrointestinal ulcers has increased more in women than in men, probably because of the fact that the former are more nervous than the latter. The increase of working hours and the consequent overstrain may act indirectly on the nervous condition of the people. However, it has been found that the excess of physical work in itself does not exert a preponderant influence on the development of gastrointestinal ulcers, the incidence of which in accordance with the age of the patients has been almost invariable from 1939 to 1942. It is also held possible that hypoalimentation may have an unfavorable local effect on the gastrointestinal mucosa and aid the development of ulcers: the diminution of the number of meals, incomplete diets and the restricted consumption of fats and proteins accelerate evacuation of the stomach. A quicker evacuation of food from the stomach results in a prolonged period of fasting, it is pointed out, during which the gastric mucosa may be injured by hunger contractions on a fasting stomach with hypersecretion. It is also possible that the lowering of nutrition may be an indirect causal factor in ulcer by diminishing the local resistance of gastrointestinal tissues, it is believed.

MOSCOW

(From a Special Correspondent by Cable)

Dec. 30, 1944.

Restoration of the Dniepropetrovsk Medical Institute

The Dniepropetrovsk Medical Institute was founded in 1917 on the basis of higher medical education for women and was organized in Ekaterinoslav (now Dniepropetrovsk) in 1916. During the period of socialist reconstruction from 1925 to 1930 the institute was considerably enlarged, apparatus and other equipment were purchased and the general library was organized. The number of students increased from 450 to 1,807 in 1930. Before the outbreak of the present war the institute had 3,275 students. By the twenty-fifth anniversary of its existence the Dniepropetrovsk Medical Institute had given the country 6,448 doctors, 248 teachers, 82 assistant professors and 21 professors.

On Aug. 14, 1941, when the German armies were approaching the city, the institute was moved to Stavropol, but the German offensive in the northern Caucasus in the autumn of 1942 made it impossible to evacuate in organized fashion to the East. Equipment which was not damaged was packed in cases for transportation but had to be left in Stavropol. Many professors, assistant professors, teachers, employees and their families were caught by the Germans and forced to return to the city.

Many members of the staff were soon after shot and killed by the Germans in their "death wagons." Among those who perished were Professors Brikker, oncologist, Brailovsky, psychiatrist, Bezchinskaya, roentgenologist, Shvartsman, therapist

and inventor, Zamkovsky, ophthalmologist, Berg, microbiologist, and some eighty-five other scientific workers and their families.

In far Ferghana in Uzbekistan students, teachers and professors merged with the Fourth Moscow Medical Institute and worked in this fashion until August 1943. After the liberation of the northern Caucasus the basic personnel of the Dniepropetrovsk Medical Institute returned to Stavropol and, after the liberation of Dniepropetrovsk, to their native city, where restoration work was begun. Destruction and damage caused by the invaders were fantastic: the new five story building of the morphologic section lay in ruins, as well as one dormitory and new clinic hospital; buildings of the section on hygiene, the largest dormitory and the administration building were partially wrecked. In the remaining buildings the inner walls had been torn down, and buildings were turned into stables and garages. All furniture and other equipment disappeared. Students and teachers began the work of restoration by clearing away rubble from buildings and making small repairs on the remaining premises. Professors and lecturers found boards and tools and began to manufacture tables and chairs, repair cupboards and carry out other building work. A number of departments were equipped with furnishings brought in the evacuation. The books, which were scattered through the town, were collected in one place and connections were established with various clinics of the city.

The new school year was begun, according to schedule, October 1. At that time some 1,800 students who had applied for the first course had been examined, 600 being accepted by each of three faculties. In addition 7,020 persons who had been students at the institute before the war were enrolled in senior courses. Personnel and students of the institute had to overcome many difficulties. Heads of departments returning from the evacuation found their apartments wrecked and looted and were forced to take up residence with their families in the dormitories, one room being assigned to a family. Under such conditions, deprived of their books and of most essential comforts, five of the scientific workers resumed their activities. Students from other cities were housed at the beginning in dormitories with hardly any glass in the windows and without electric lights. Not all classrooms had been furnished with desks and chairs at the beginning of the school year, and students had to stand during lectures. However, in spite of all these trials and hardships the institute grew considerably between December 1943 and October 1944. The premises are being put in order gradually; the library is being replenished; living conditions are improving; but a great deal of work still remains to be done before the institute can return to its prewar status.

Marriages

WILLIAM L. SHARP to Miss Jean Montgomery, both of Anderson, Ind., at Camp Maxey, Texas, September 2.

JAMES JACKSON HUTSON, Charleston, S. C., to Miss Miriam Poe Hickman of Wilmington, N. C., November 10.

HARRY RICHARD RYAN Jr., Rutland, Vt., to Miss Dansy Paulina Rawls of Dublin, Ga., November 18.

FRANCIS M. BURKE, Coleman, Texas, to Miss Ruth Pettus of Berkeley, Calif., at Dallas, September 15.

CHARLES B. HANNA, Charleston, S. C., to Miss Lena Mae Bryant of Nichols, S. C., September 19.

LYNWOOD EARL WILLIAMS to Miss Dorothy Dean Wells, both of Kinston, N. C., November 25.

CHARLES G. H. MENGES, York, Pa., to Miss Betty G. Cook of Lock Haven, October 7.

WILLIAM N. HORST, Crown Point, Ind., to Miss Jean Mason of Chicago, October 16.

PAUL WILLIAM SPEAR, Baltimore, to Miss Belle Kazan of New York, June 30.

Deaths

M. James Fine * Newark, N. J.; University of Maryland School of Medicine, Baltimore, 1910; member of the American College of Chest Physicians; served during World War I; major, medical reserve corps, U. S. Army, not on active duty; for many years director of the tuberculosis bureau of the Newark Health Department; consulting physician of the tuberculosis division, state health department; examining physician for the National Jewish Hospital, Denver; chief of the tuberculosis service at the City Hospital; tuberculosis consultant for Newark Beth Israel Hospital; on the staff of the Essex Mountain Sanatorium, Verona; consulting and examining physician for the Deborah Sanatorium, Browns Mills; medical consultant to the rehabilitation clinics of the state department of labor; physician to the Essex County Juvenile Court; died December 17, aged 60, of heart disease.

George Monroe Brown Bradshaw * Panama, N. Y.; Columbian University Medical Department, Washington, D. C., 1900; member of the Medical Society of the State of Pennsylvania; served as health officer of the town of Harmony and of the village of Panama since November 1933 and March 1934

War I; member of the Selective Service Appeals Board during World War II; instructor in clinical medicine at his alma mater; on the visiting staffs of the Bethesda General Hospital, St. Luke's Hospital and the Barnes Hospital, where he died November 27, aged 56, of carcinoma of the sigmoid.

Alfred Meyer Goltman * Memphis, Tenn.; Columbia University College of Physicians and Surgeons, New York, 1921; associate professor of medicine at the University of Tennessee College of Medicine; specialist certified by the American Board of Internal Medicine; member of the American Association for the Study of Allergy; fellow of the American College of Physicians; served an internship at the Mount Sinai Hospital in New York; internist to the John Gaston Hospital and the Baptist Memorial Hospital, where he died November 11, aged 49, of coronary heart disease.

Howard Chalfant Adams, Wolbach, Neb.; Rush Medical College, Chicago, 1898; died in St. Francis Hospital, Grand Island, October 30, aged 71, of coronary heart disease, arteriosclerosis and chronic asthma.

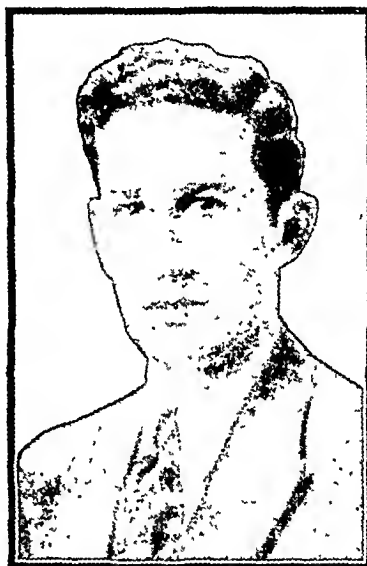
Charles Z. Candler * Sylva, N. C.; Atlanta College of Physicians and Surgeons, Atlanta, Ga., 1901; senior fellow of the Southeastern Surgical Congress; life member of the American College of Surgeons; honorary member of the Medi-



CAPT. HENRY BERTULL
M. C., A. U. S., 1917-1944



CAPT. GEORGE WILLIAM FLOSS
M. C., A. U. S., 1907-1944



LIEUT. CHARLES F. GOETSCH
(MC), U.S.N.R., 1911-1944

respectively; formerly secretary of the board of health of Sugar Grove, Pa.; a lieutenant in the medical corps of the U. S. Army during World War I; member of the staffs of the Woman's Christian Association and the Jamestown General hospitals; died suddenly November 28, aged 80, of coronary thrombosis.

Frank DeVore Gorham * St. Louis; Washington University School of Medicine, St. Louis, 1912; specialist certified by the American Board of Internal Medicine; member of the American Gastro-Enterological Association; fellow of the American College of Physicians; served overseas during World

War I; member of the State of North Carolina; served during World War I; served as a member of the Dillsboro and Sylva town council; for two years a member of the board of commissioners of Jackson County; founder and chief of staff, C. J. Harris Community Hospital; died December 12, aged 67, of coronary occlusion.

Mallory B. Culpepper * Carlsbad, N. M.; Medical Department of Tulane University of Louisiana, New Orleans, 1894; served as president of the New Mexico Medical Society and the Eddy County Medical Society; bank president and

KILLED IN ACTION

Henry Bertull, Brooklyn; Cornell University Medical College, New York, 1942; served an internship at St. Vincent's Hospital in New York; commissioned a first lieutenant in the medical corps, Army of the United States, on June 10, 1942; later promoted to captain; died in France Aug. 28, 1944, aged 27, of shell fragments in the head and left shoulder received in action.

George William Floss, Swissvale, Pa.; University of Pittsburgh School of Medicine, 1932; member of the American Medical Association; served an internship at St. John's General Hospital in Pittsburgh; commissioned

a first lieutenant in the medical corps, Army of the United States, on Jan. 12, 1943 and began active duty on Feb. 4, 1943; later promoted to captain; drowned in the South Pacific area Oct. 20, 1944, aged 37.

Charles Francis Goetsch, Long Island City, N. Y.; Long Island College of Medicine, Brooklyn, 1936; served an internship at St. Mary's Hospital, Brooklyn; commissioned a lieutenant (jg) in the medical corps of the U. S. Naval Reserve on July 29, 1942; promoted to lieutenant on Oct. 1, 1943; died in the Pacific area July 21, 1944 of a fragment shell wound in the abdomen, aged 33.

member of the school board; on the staffs of the Carlsbad Memorial and St. Francis hospitals; died in St. Mary of the Plains Hospital, Lubbock, Texas, October 13, aged 73, following a prostatectomy.

Rudolph Carl Engel * Cleveland; University of Wooster Medical Department, Cleveland, 1902; medical director of the Republic Steel Corporation; member of the American Association of Industrial Physicians and Surgeons; on the staffs of St. Alexis and St. Luke's hospitals; died in Shaker Heights, Ohio, November 28, aged 65, of coronary thrombosis.

Israel Aaron Fine, Steubenville, Ohio; Ohio State University College of Medicine, Columbus, 1924; member of the American Medical Association; on the staffs of the Gill Memorial and Ohio Valley hospitals; died November 19, aged 44, of coronary thrombosis.

James Irion Hollingsworth, Waurika, Okla. (licensed by years of practice); member of the American Medical Association; councilor of the Fifth District of the Oklahoma State Medical Association; formerly city physician of Muskogee; for eighteen years chief surgeon for the Waurika Hospital, where he died November 30, aged 65, of duodenal ulcer.

Robert Ignatius Hubert, San Marino, Calif.; University of Minnesota College of Medicine and Surgery, Minneapolis,

medical examiner for public schools; served on the staffs of the Harper Hospital, Detroit, and the Borgess Hospital; died November 15, aged 65, of coronary thrombosis.

Jay Richard Lanning * Corinth, Miss.; Memphis (Tenn.) Hospital Medical College, 1900; served in the medical corps of the U. S. Army during World War I; died in the McRae Hospital November 26, aged 72, of coronary disease and diabetes mellitus.

Elmer C. Ludlum, Carmen, Okla.; University Medical College of Kansas City, Mo., 1899; died August 24, aged 69, of coronary thrombosis.

James Roller McMurray * Galveston, Texas; University of Texas School of Medicine, Galveston, 1926; formerly assistant professor of pediatrics at his alma mater; captain, medical reserve corps, U. S. Army, not on active duty; served as physician to the Lasker Home for Homeless Children; on the staff of St. Mary's Infirmary; served an internship and member of the staff of the John Sealy Hospital, where he died October 27, aged 42, of osteomyelitis of the jaw and multiple lung abscesses.

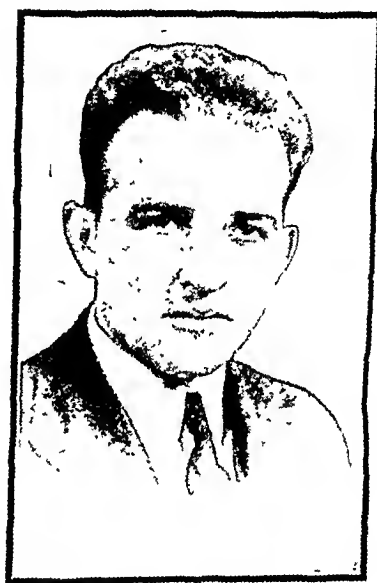
Giles C. Moorehead, Ida Grove, Iowa; State University of Iowa College of Medicine, Iowa City, 1879; member of the American Medical Association; on the staff of the Ida Grove



MAJOR HERMAN M. LORD
M. C., A. U. S., 1911-1944



CAPT. JOHN R. McELROY
M. C., A. U. S., 1916-1944



CAPT. BERNARD JOSEPH SABATINO
M. C., A. U. S., 1912-1944

1898; formerly a member of the city health department of Los Angeles; died November 17, aged 78, of coronary thrombosis.

Frederick M. Ilgenfritz, Kalamazoo, Mich.; Detroit College of Medicine, 1903; member of the American Medical Association;

Hospital; at one time member of the school board; died November 7, aged 88, of chronic myocarditis.

Alexander Cobb Pennington, Steens, Miss.; Chattanooga (Tenn.) Medical College, 1908; died October 1, aged 64.

KILLED IN ACTION

Herman McNeill Lord, Chelsea, Mich.; Wayne University College of Medicine, Detroit, 1938; member of the American Medical Association; served an internship at the Grace Hospital and a residency in obstetrics and gynecology at the Woman's Hospital, Detroit; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on Dec. 4, 1940; began active duty in the Army of the United States on Jan. 27, 1941 and was assigned to the Fitzsimons General Hospital in Denver, where he taught enlisted personnel; promoted to captain; sent to the Mayo Clinic in January 1943 for a course in internal medicine, returning to Fitzsimons for a course in hospital management; after a short period at Northington General Hospital was assigned to the 45th Field Hospital at Fort Bragg, N. C.; sent to England in February 1944; promoted to major; killed in action in Belgium Oct. 27, 1944, aged 33.

John Robert McElroy, Waterloo, Iowa; State University of Iowa College of Medicine, Iowa City, 1941; served an internship at the University of Nebraska Hospital in Omaha; commissioned a first lieutenant in the medical corps, Army of the United States, on June 27, 1941; later promoted to captain; died in the European theater of operations July 28, 1944, aged 28, of wounds received in action.

Bernard Joseph Sabatino, Baltimore; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1938; served an internship and residency at St. Joseph's Hospital; began active duty as a first lieutenant in the medical corps, Army of the United States (National Guard), Feb. 3, 1941; later promoted to captain; field hospital surgeon with the twenty-ninth division; killed in action in the European area, June 6, 1944, aged 31.

Correspondence

RABIES CONTROL

To the Editor:—I read with genuine interest your comment, November 4, concerning rabies in New York City. A program inaugurated in our city of 36,000 inhabitants, just across the border from the city of St. Louis, has yielded excellent results and it might interest other health officers. A number of communities have followed this plan and are pleased with its workings.

Briefly, we shifted the direction of animal control to the health commissioner with gratifying success, yet working in close cooperation with the police department. At one time, one of the film companies was interested but owing to the war, screen portrayal fell through. In addition it was brought to the attention of the United States Public Health Service.

I firmly believe that if the U. S. Public Health Service would sponsor national distribution of a carefully prepared film showing rabid dogs and if the film was carefully edited to bring out the health officers' essential points and emphasizing the reasons for each step, we would get it over to the children attending the picture shows and through them to their parents—the adults. If this portrayal was then followed by a well planned movie showing a puppy who later became rabid—and we have had them—playing with a child or children we would achieve a far reaching result without the necessity of portraying the demise of a child from this horrible disease. This approach would eliminate the alarm to the movie audience, so often composed largely of pregnant women, which the movie industry is anxious to avoid.

Why not clean up rabies once and for all in our nation?

WALTER R. HEWITT, M.D., University City, Mo.
Health Commissioner.

[NOTE.—Following is the plan used in University City:]

The old system wherein the dog catcher travels the streets escorted and guarded by police officers always provoked resistance. We decided to abandon the police escort, since it provoked resistance from the public. We next directed our attention to selecting a certain type of men for the animal control department. The wagon was painted black with "Animal Control" in neat letters on both sides. The men were given an official letter of authority with the University City seal stamped on it. They were dressed in dark blue uniforms and dark visor hats, and around these hats was placed a black hatband on which, in front, "Animal Control" was embossed with 1¼ inch gold letters. The quiet dignity impressed our citizens and enabled us to get away from the old badge idea, which the public likened to police officers and which provoked resistance. Men of kind disposition and smiling countenance were obtained, and they were instructed to present themselves in tailored, clean uniforms, shaven and well groomed. They were further instructed that the public would not understand the law and that they were to be salesmen and emissaries of good will. In approaching people they were to impress on them to keep calm and to talk things over with them. Should the involved party be a woman, they were instructed to raise their hats in approaching her. They were to inform the public that they were paid by the day and not by the number of dogs they caught, that we did not want their pets, that we were anxious to protect their children and their pets, and to ask their help and cooperation.

At once brawls and loud boisterous talk ceased. Less than half a dozen incidents have occurred in the last six months in carrying out this plan. In several instances dogs have been removed from the net by irate citizens, and the animal control men have been instructed to offer no resistance but to obtain the names and addresses of these persons. This matter then comes

under police powers and it is usual for the police to bring the offending party into court on an arrest notice. In this connection it has been found that the payment of costs and a small fine, which may or may not be stayed, on the recommendation of the court works well. It is far wiser than a heavy fine, which is apt to lead to an appeal to a higher court and which creates animosity, which we are attempting to avoid. At the same time a wisely placed appeal for cooperation made from the bench has been helpful and has led to the cooperation of the citizen and has avoided the development of rancor.

Our animal control men are specifically instructed that our ordinance requires all license and impounding fees be paid to our tax collector, and under no circumstances are they to touch any money. Should occasion arise at night, the police department acts for the tax collector.

Guns also are obsolete and should never be permitted. A shooting could easily wreck an entire program. We believe that it is better to allow the dog to be taken away or to escape, as by that very act one makes friends among the citizenry. It will save broken noses or litigation, and it places the burden on the citizen.

When we instituted this program, "mercy acts" were permitted and dogs were released on the citizen's signature on recommendation of our animal control department when there was justifiable reason. These little acts further ingratiated the department in the minds of the public. The citizen invariably responded by expressing appreciation and offering to cooperate with the department.

Remember, animal control is on a higher plane than dog catching and is designed to protect each of us as well as our pets from the stray that is a reservoir for rabid dogs. We believe that citizens and their pets should be treated kindly, courteously and sympathetically. This simple method has led almost to tripling the number of licenses issued. Only an occasional dog is now seen on the street at large. The number of dog bites is decreasing.

Bureau of Investigation

MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE.—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act, and in cases in which they refer to drugs and devices they are designated D.D.N.J. and foods, F.N.J. The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the date of shipment; (4) the composition; (5) the type of nostrum; (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment.]

Bafaline Tablets.—Bafaline Laboratories, Inc., Manchester, N. H. Shipped Jan. 7 and July 18, 1941. Composition: essentially acetylsalicylic acid and caffeine, with indications of gelsemium. One consignment was declared misbranded in that the label statements represented that the product would be effective in relieving pain, colds and discomfort resulting from various rheumatic pains, act as a restorative on the nervous system, and accomplish some other things.—[D.D.N.J., F.D.C. 828; December 1943.]

Brown's Nosepen.—Am-Bro Company, Lawton, Okla. Shipped Jan. 7, 1942. In two units, "No. 1 Solution" and "No. 2 Solution." Composition: No. 1 essentially ephedrine sulfate (about 1 per cent), chlorobutanol and water; No. 2, essentially ephedrine alkaloid (approximately ¼ per cent) and small amounts of volatile oils, including camphor, menthol and eucalyptus in a mineral oil base. Both bottles misbranded because they contained ephedrine but labels failed to warn that frequent or continued use might cause nervousness, restlessness and sleeplessness, and that preparations should not be taken, except on competent advice, by persons suffering from high blood pressure, heart disease, diabetes or thyroid trouble, and because the No. 2 Solution contained mineral oil, whereas its label failed to warn that frequent or excessive use might injure the lungs, and that the product should not be given to infants

and young children except on competent advice. Further misbranded because name "Nosopen" falsely suggested that preparation would open nasal passages and make breathing easier. Also misbranded because use of the words "Discomforts of Hay Fever, Asthma, Sinus Head Colds" was false and misleading in representing that Nosopen would be efficacious for all discomforts of the conditions named, whereas it would be effective only to lessen nasal congestion.—[D.D.N.J., F.D.C. 811; December 1943.]

Clearwater's Combination Medicine.—Henry P. Clearwater, trading as Pope Laboratories, Hallowell, Maine. Shipped July 18 and August 12, 1940. Three products in combination. Composition. No. 1, a pink tablet, essentially a mixture of ferrous carbonate, potassium iodide, calcium glycerophosphate, manganese dioxide, sulfur, and a compound of zinc; No. 2, a white tablet containing cascara, and No. 3, a pink compressed tablet consisting largely of aspirin and starch. Misbranded because falsely represented to be efficacious as a reconstructive systemic tonic and a treatment and preventive of rheumatism and arthritis.—[D.D.N.J., F.D.C. 822; December 1943.]

Ecco Hygienic Powder.—Eby Chemical Company, Harrisburg, Pa. Shipped April 13, 1942. Composition. Essentially boric acid and alum, with small amounts of oxyquoline sulfate, menthol, thymol, phenol, eucalyptol, salicylic acid and methyl salicylate. Bacteriologic tests showed that it was not germicidal in the dilution recommended for use. Misbranded because labeling falsely represented that it was a reliable contraceptive and appropriate treatment for head colds, rhinitis, rectal irritations, bleeding gums, trench mouth, abscesses, boils, hemorrhoids, leucorrhea, vaginitis, gonorrhea and many other disorders.—[D.D.N.J., F.D.C. 830; December 1943.]

Heilmann's Formula "99."—Frank J. Heilmann, trading as Heilmann's National Distributors, Los Angeles. Shipped August 7, 1941. Composition: essentially potassium acetate, potassium iodide, resinous matter, colchicin, alcohol and water. Misbranded because labels falsely represented that the product would act as a stimulant diuretic, benefit gouty conditions, prevent heart injury resulting from the pain, discomfort and ill effects of gouty and rheumatic conditions; would be of value in preventing many forms of rheumatism, as well as syphilitic neuralgia; prevent and immediately relieve pain, produce buoyant energy and accomplish some other things.—[D.D.N.J., F.D.C. 826, December 1943.]

Ironized Yeast.—Ironized Yeast Company, Inc., Atlanta, Ga. Shipped prior to Dec 20, 1941. Composition not reported, except quotation from label: "Each tablet contains reduced iron—Iron Peptonized Haemoglobin Vitamin B Concentrate from Yeast Lager Yeast." Misbranded because labeling falsely represented that the product would be beneficial for underweight, run-down, tired and nervous people, would increase weight, vigor and appetite and dispel weariness.—[D.D.N.J., F.D.C. 838; December 1943.]

Neo-Sed.—Hale Drug Company, Birmingham, Ala. Shipped Jan. 7, 1942. Composition: essentially barbital (0.7 grain per fluid ounce), compounds of sodium, ammonium and potassium, bromides, benzoic acid, sugar and water. Misbranded because label did not adequately warn that frequent or continued use of product might lead to mental derangement, skin eruptions or other serious disorders, and that it should not be taken by those suffering from kidney diseases. Also misbranded because fabricated from two or more ingredients, whereas label failed to state common or usual names of these or to declare quantity of bromide present. Further misbranded because label did not accurately state the amount of contents.—[D.D.N.J., F.D.C. 809; December 1943.]

Old Hickory Ointment.—Old Hickory Medicine Company, Chattanooga, Tenn. Shipped May 5, 1942. Composition: essentially a mixture of zinc oxide, salicylic acid, calomel, carbolic acid, camphor, menthol and petrolatum. Misbranded because label falsely represented the product as being effective in the treatment of acne, barber's itch, tetter, dandruff, psoriasis, itching piles and some other things. Further misbranded because label failed to state the quantity or proportion of calomel, a mercury derivative, that was present.—[D.D.N.J., F.D.C. 839, December 1943.]

Pine Glow Bath and Rainbo Bath.—Rainbath Laboratories, San Francisco. Shipped Feb. 16, 1942. Composition. Pine Glow Bath, essentially water, with the sodium salt of a sulfonated oil, and volatile oils, including oil of pine needles; Rainbo Bath was essentially a lime-sulfur solution. First product misbranded because falsely represented in labeling as effective in overcoming insomnia, aiding health and benefiting muscular rheumatism and gout and eliminating poisons, increasing the white corpuscles and bringing about weight reduction. Rainbo Bath misbranded because of false label representations that the product was colloidal sulfur and that when placed in the bath water would give the benefits derived from the treatments at hot springs and spas.—[D.D.N.J., F.D.C. 836, December 1943.]

Purola Female Pills.—McKesson & Robbins, Inc., and Blumauer-Frank Drug Company, Portland, Ore. Shipped Nov. 19, 1941. Composition: essentially laxative plant drugs, including aloes, with oil of tansy, alkaloidal material (probably derived from ergot) and iron sulfate. Misbranded because, in spite of laxative ingredients, the label did not warn that the product should not be used when abdominal pain, nausea, vomiting, or other symptoms of appendicitis are present, and that frequent or continued use might result in dependence on a laxative; further misbranded in that name "Female Pills" and directions inside box to misbranded in that name "expected period" gave the false and misleading impression that the preparation would be effective in promoting the menstrual flow, whereas it would not.—[D.D.N.J., F.D.C. 813, December 1943.]

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Right of Discharged Army Medical Officer to Employment Held Prior to Entering Service.—Kay "entered the service" of the General Cable Corporation in July 1931 as the "medical director" of one of its plants on the basis of a "full working week" at the plant. About six months later "this was reduced to three hours a day" five days a week, although he remained "on call" by the corporation at all hours and was expected as needed to visit at their homes or at a hospital employees injured in the course of their employment. His duties were to render all necessary medical care to employees so injured, to make preemployment physical examinations and to conduct routine physical examinations of all employees. The corporation furnished him at its plant fully equipped a waiting room, dispensary, treatment room, rest room, drug room and two examination rooms. Four nurses employed by the corporation assisted him and he had no right either to hire or to discharge the nurses. He was paid a certain sum weekly without regard to the number of patients he treated or the number of hours he spent in treating employees of the corporation. From this weekly compensation the corporation "deducted payments for social security and unemployment compensation." At one time when Kay's draft board classified him as 1-A the corporation filed an affidavit for his deferment, describing him as "a regular employee." Outside the plant he maintained his own office, where he received his private patients but where also he was required to receive such employees as were sent by the company.

Kay entered the Army, served six months and was honorably discharged. The corporation refused to reinstate him in his former capacity and he brought action against it to compel his reinstatement under section 8(e) of the Selective Training and Service Act of 1940, which provides that any person who, on entering the military or naval service of the United States, has left "a position, other than a temporary position, in the employ of any employer" shall, in the case of a private employer, be restored to such position or to a position of like seniority status and pay, "unless the employer's circumstances have so changed as to make it impossible or unreasonable to do so." The trial court dismissed his action on the ground that he did not hold a position "in the employ" of the corporation, and Kay appealed to the circuit court of appeals, third circuit.

The status, said the circuit court of appeals, protected by the Selective Training and Service Act is "a position . . . in the employ of" an employer—an expression evidently chosen with care. It will be noted that the word "employee" was not used in the statute. While it may be assumed that the expression which was adopted is roughly synonymous with "employee," it unmistakably includes employees in superior positions and those whose services involve special skills, as well as ordinary laborers and mechanics. Of course, the words are not applicable to independent contractors, but, except for casual or temporary workers, who are expressly excluded, they cover almost every other kind of relationship in which one person renders regular and continuing service to another. The policy of the act is stated in section 1(b), 50 U. S. C. A. Appendix, section 301(b), to be that "the obligations and privileges of military training and service should be shared generally in accordance with a fair and just system . . ." though such declaration was hardly needed. Every consideration of fairness and justice makes it imperative that the statute should be construed as liberally as possible so that military service entail no greater setback in the private pursuit or career of the returning soldier than is unavoidable. The question here presented, therefore, is not to be solved by the application of abstract tests or formulas, but the factors which usually determine the nature of a disputed relationship must be considered in the light of the purpose which Congress intended to accomplish. Of course, the corporation could not exercise any control over the details of Kay's work

as a physician. The method of physical examination, the diagnosis and the treatment of injuries were necessarily his sole province, and if the right to dictate the manner of doing the work were the final and decisive test Kay could not be classed as an employee. However, even in cases in which the interpretation of a statute is not involved, that is by no means the only thing to be considered. In the present case the manner in which Kay was paid, the extent to which his time was at the corporation's disposal and the right of the company to discharge him at any time point to an employee status rather than that of an independent contractor. So long as he was associated with the corporation he did not have the practicing physician's freedom to choose his own patients but was bound to receive and treat every case referred to him by it. Ownership of the premises on which Kay did most of his work and of the instrumentalities used, as well as the control of his subordinates and assistants, were all in the corporation. For what it is worth, the defendant unquestionably considered him no different from any ordinary employee. It required him to punch a time clock and rewarded him with the employee's regular ten year service button, the Army and Navy E certificates and employee's bonus for enlistment. The relationship which resulted from all these various factors, viewed in the light of the purpose of the statute, is clearly a position in the employ of the corporation and is perhaps better described by that term than any other which could be found.

We agree, continued the court, with the learned judge of the district court that the circumstances of the employer did not, during the plaintiff's absence, change so as to make it unreasonable for the corporation to reengage him. The change in circumstances on which it grounded its refusal was this. In addition to his position with the corporation, the plaintiff had been engaged as physician for an employees' health association, each member of which paid a monthly premium. Kay received a certain fee per month for each member, for which he was to give the members medical treatment for ills not connected with compensable injuries, which were the subject matter of his employment with the corporation. When Kay went into the Army the health association employed another physician. On his return the association declined to reemploy him preferring the new man. The position of the corporation is that it makes for greater efficiency and avoids some loss of the workers' time to have the same physician for both the company and the health association. There is also a faint suggestion that Kay had for some reason become unacceptable to the health association, but there is no evidence whatever of a change in his personal relations with the corporation and it is not suggested that his professional qualifications, his mental or physical ability to do the work or his personal characteristics had altered in any way, or that the corporation had any reason to believe that his services as medical director would be in any way different or less satisfactory than they were before he left. The Selective Training and Service Act says, unless the "employer's" circumstances have changed. Primarily, no doubt, this was intended to provide for cases in which necessary reduction of an employer's operating force or discontinuance of some particular department or activity would mean simply creating a useless job in order to reemploy the veteran. Without deciding whether a change in the veteran's relations with other employees or with third parties generally can ever constitute a change in the "employer's" circumstances within the meaning of the act, and assuming that the refusal of the association to reemploy him is a relevant fact, we believe that there was no change in this case which would make it unreasonable for the corporation to reengage Kay. Accepting the corporation's contention that there would be some loss of efficiency and possibly some additional expense involved, more than that is needed to justify refusal to reinstate a person within the protection of the act. In most cases it is possible to give some reason for the refusal. "Unreasonable" means more than inconvenient or undesirable. The company's argument on this point, if carried to its necessary conclusion, would defeat the main purpose of the act and limit its operation to merely capricious or arbitrary refusals. Men and women returning from military service find themselves, in countless cases, in competition for jobs with persons who have been filling them in their absence. Handicapped, as they are bound to be by prolonged absence, such competition is not part of a fair and just

system, and the intention was to eliminate it as far as reasonably possible. The act intends that the employee should be restored to his position even though he has been temporarily replaced by a substitute who has been able, either by greater efficiency or by a more acceptable personality, to make it desirable for the employer to make the change a permanent one.

The court accordingly remanded the cause to the district court with instructions to enter a judgment that in effect would compel Kay's reinstatement to the position he held with the corporation prior to his entry into the Army—*Kay v. General Cable Corporation*, 144 F (2d) 653 (1944).

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL January 13, page 120.

BOARDS OF MEDICAL EXAMINERS

- ALABAMA Montgomery, June 26 28 Sec, Dr B F Austin, 519 Dexter Ave, Montgomery.
- ALASKA Juneau, March Sec, Dr W M Whitehead, Box 561, Juneau.
- ARKANSAS * *Eclectic* Little Rock, June 7 Sec, Dr C H Young, 1415 Main St, Little Rock.
- CALIFORNIA Oral Los Angeles, Jan 21 Written Los Angeles Feb 27 March 2 Sec, Dr Frederick N Scatena, 1020 N St, Sacramento 14.
- CONNECTICUT * *Homeopathic* Derby, March 12 13 Sec, Dr J H Evans, 1488 Chapel St. New Haven Medical Examination March 13 14 Endorsement March 27 Sec to the Board, Dr Creighton Barker, 258 Church St. New Haven.
- DELAWARE Examination Dover, July 10 12 Reciprocity Dover July 17 Sec, Medical Council of Delaware, Dr J S McDaniell, 229 S State St, Dover.
- DISTRICT OF COLUMBIA * Reciprocity Washington, March 12 Sec, Commission on Licensure, Dr G C Ruhland, 6150 L Municipal Bldg, Washington 1.
- FLORIDA * Jacksonville, June 24 26 Sec, Dr Harold D Van Scharek, 2736 S W Seventh Ave, Miami 16.
- KANSAS Topeka Feb 19 20 Sec, Board of Medical Registration and Examination, 905 N Seventh St, Kansas City 10.
- KENTUCKY Louisville, June 18 20 Sec, State Board of Health Dr Philip E Blackerby, 620 S Third St, Louisville 2.
- MAINE Portland, March 13 14 Sec, Board of Registration of Medicine, Dr A P Leighton, 192 State St, Portland.
- MARYLAND Baltimore, June 19 22 Sec, Dr J T O'Mara, 1215 Cathedral St, Baltimore.
- MASSACHUSETTS Boston March 13 16 Sec, Board of Registration in Medicine, Dr H Q Gallup, 413 F State House Boston.
- MISSISSIPPI Jackson Feb 9 Asst Sec, State Board of Health, Dr R N Whitfield, Jackson 113.
- MONTANA Helena, April 24 Sec, Dr O G Klein, First Nat'l Bank Bldg, Helena.
- NEVADA Endorsement Carson City Feb 5 Sec, Dr G H Ross, 215 N Carson St, Carson City.
- NEW HAMPSHIRE Concord, March 8 9 Sec, Board of Registration in Medicine, Dr D G Smith, 77 Main St, Nashua.
- NEW MEXICO * Santa Fe, April 9 10 Sec, Dr LeGrand Wait, 141 Palace Ave, Santa Fe.
- NEW YORK Albany, Buffalo New York and Syracuse, Jan 29 Feb 1 Chief, Mr H L Field Education Bldg Albany.
- OHIO Columbus, June Sec, Dr H M Flatter, 21 W Broad St, Columbus.
- OREGON * Portland Jan 24 27 Exec Sec Miss L M Conlee, 608 Tailing Bldg, Portland 4.
- PENNSYLVANIA April 10 13 Act Sec, Bureau of Professional Licensing Department of Public Instruction Mrs M G Steiner, 358 Education Bldg, Harrisburg.
- SOUTH CAROLINA Columbia, June 25 27 Sec, Dr N B Heyward, 1329 Blandina St, Columbia.
- VERMONT Burlington, June Sec, Dr F J Lawless Richford.
- VIRGINIA * Richmond, June 20 23 Sec, Dr J W Preston, 30½ Franklin Rd, Roanoke.
- WEST VIRGINIA Charleston Feb 26 28 Commissioner, Public Health Council Dr John E Offner, State Capitol, Charleston 5.
- WYOMING Cheyenne, Feb 5 6 Sec, Dr M C Keith, Capitol Bldg, Cheyenne.

* Basic Science Certificate required

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

- CONNECTICUT Feb 10 Address State Board of Healing Arts 250 Church St, New Haven 10.
- DISTRICT OF COLUMBIA Washington April 23 24 Sec, Commission on Licensure, Dr G C Ruhland, 6150 L Municipal Bldg, Washington 1.
- FLORIDA DeLand June 1 Sec, Dr J F Conn, John B Stetson University, DeLand.
- NEW MEXICO Santa Fe, Feb 12 Sec, Miss Marion M Rhea, State Capitol, Santa Fe.
- OREGON Portland, March 3 Sec, Board of Higher Education, Mr C D Byrne, University of Oregon, Eugene.
- RHODE ISLAND Providence Feb 14 Chief Division of Examiners, Mr Thomas B Casey, 366 State Office Bldg, Providence.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1935 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery 14:109-123 (Nov.) 1944

Psychiatric Problems in Flying Personnel. W. O. Klingman.—p. 109.
Renal Complications of Sulfonamide Therapy. K. E. Luckie.—p. 114.
Rabies. H. N. Johnson.—p. 119.
Uterine Hemorrhage in Pregnancy and Puerperium. J. Watson.—p. 122.

American Journal Digestive Diseases, Fort Wayne, Ind. 11:345-376 (Nov.) 1944

Observations on Possible Pathogenicity of Paracolon Bacilli as Incitants of Diarrheal Diseases in Infants and Children. E. R. Neter and Phyllis Clark.—p. 356.
Caecum (Typhlon) with Ascending Colon and Part of Transverse Colon Considered as Chamber: Superior Colic Ventriculus (Holotyphlon). T. H. Evans.—p. 360.
Why Failures in Treatment of Allergy. J. A. Turbull.—p. 363.
Nutritional Basis of Nervous Disorders in Children. I. N. Kugelmass.—p. 368.

Annals of Surgery, Philadelphia

120:417-688 (Oct.) 1944, Partial Index

Repair of Surface Defects of Foot. J. B. Brown and B. Cannon.—p. 417.
Refrigerated Skin Grafts. J. P. Webster.—p. 431.
Skin Graft Fixation by Plasma-Thrombin Adhesion. F. Young.—p. 450.
*Influence of Sulfonamides on Postoperative Complications. J. E. Rhoads and I. S. Ravdin.—p. 463.
*Chronic Constrictive Pericarditis: Partial Pericardiectomy and Epicardiolysis in 24 Cases. S. W. Harrington.—p. 468.
Problem of Embolism of Pulmonary Artery. H. Neuhof.—p. 488.
Effect of Sulfonamides on Experimental Gunshot Wounds Involving Peripheral Nerves. L. Davis, F. Hiller, G. Perret and W. Carroll.—p. 494.
Thionacil in Preparation of Thyrotoxic Patients for Surgery. H. M. Clute and R. H. Williams.—p. 504.
*Relationship of Protein Deficiency to Surgical Infection. P. R. Cannon, R. W. Wissler, R. L. Woolridge and E. P. Benditt.—p. 514.
Emergency Gastrectomy for Acute Perforation of Carcinoma of Stomach, with Diffuse Soiling of Free Peritoneal Cavity. J. D. Bisgard.—p. 526.
Complications and Mortality in Subtotal Gastrectomy for Duodenal Ulcer. L. S. McKittrick, F. D. Moore and R. Warren.—p. 531.
*Closure of Colonic Stoma: Improved Results with Combined Succinylsulfathiazole and Sulfathiazole Therapy. C. F. Dixon and R. E. Benson.—p. 562.
Advantages and Disadvantages of Closed Resection of Colon. W. C. White and F. H. Amendola.—p. 572.
Inflammatory Stricture of Rectum. F. M. Woods and C. R. Hanlon.—p. 598.
Influence of Estrogens on Peripheral Vasomotor Mechanism. E. J. McGrath and L. G. Herrmann.—p. 607.
Modification of King Operation for Bilateral Vocal Cord Paralysis. J. W. Shirer.—p. 617.
Danger and Prevention of Citrate Intoxication in Massive Transfusions of Whole Blood. W. E. Adams, T. F. Thornton, J. G. Allen and D. E. Gonzalez.—p. 656.
Surgical Manifestations of Coccidioidomycosis. L. M. Quill and J. C. Burch.—p. 670.

Influence of Sulfonamides on Postoperative Complications.—Rhoads and Ravdin studied the mortality of the postoperative infection occurring in a general surgical service and made a comparison of the experience during the three years prior to the introduction of the sulfonamides with the experience during the four years following their general acceptance. The most important advance occurred in the treatment of postoperative bronchopneumonia, the gross mortality dropping from 69 per cent to 9 per cent. It is pointed out that better control of postoperative complications not only permits some saving of life but also permits a broader selection of patients, especially in the older age groups, for certain operations which are indicated but in which in the past the contraindications have slightly outweighed the indications.

Partial Pericardiectomy and Epicardiolysis in Constrictive Pericarditis.—Harrington reports 24 cases in which partial pericardiectomy and epicardiectomy with epicardiolysis were performed. He uses the term "epicardiolysis" to designate the separation of the innermost layer of the pericardium from the heart muscle. This procedure is used in addition to resecting a portion of pericardium and epicardium. Epicardiolysis is an important and essential part of the operative procedure. Immediately after operation all patients are placed in an oxygen tent. The oxygen not only prevents cyanosis but aids in relieving stress on the heart. Other postoperative measures are directed toward removal of body fluids and aiding the function of the heart and liver. In 9 cases of chronic constrictive pericarditis cure resulted from pericardiectomy; in another 9 cases the operation was followed by improvement, whereas death followed in the remaining 6 cases. This amounts to a mortality rate of 25 per cent. Although this is relatively high, the author thinks that this is commensurate with the seriousness of the disease and that the mortality rate would have been 100 per cent without surgical intervention. Eleven of the 24 patients can be considered cured at this time, and 2 additional patients may subsequently improve.

Relationship of Protein Deficiency to Surgical Infection.—Cannon and his associates demonstrated by both immunologic and chemical methods that in the blood serums of protein deficient rats there is a lowered concentration of antibody globulin fractions. This indicates the adverse action of protein deficiency on protein reserves. In many surgical conditions serum protein fractions are lost through exudates, hemorrhage or the kidneys. Furthermore, undernutrition caused by an inadequate intake, absorption or utilization of high quality protein may lead to depletion of the tissue protein reserves both before and after operation. This loss of tissue proteins may become critical if and when a potentially pathogenic microorganism enters tissues unprepared to mobilize the forces of acquired resistance. Reliance on the so-called albumin-globulin ratio for the determination of the state of the tissue protein reserves is inadequate. We need to know not only whether the globulins are in a lowered concentration but particularly whether there is a diminished concentration of the gamma globulin fraction. In the absence of a quantitative clinical method for determining the concentration of gamma globulin, dependence must be placed on the evaluation of the preoperative weight loss and total serum protein determinations. If the total serum protein concentration is found to be less than 5 Gm. per hundred cubic centimeters of serum, preoperative protein repletion should be attempted. Gamma globulin presumably contains many if not most of the essential amino acids. For its synthesis it is necessary to provide an abundance of essential amino acids. In patients with depleted globulin reserves repletion necessitates the ingestion or intravenous administration of proteins containing all of the essential amino acids. The further effects will depend on the patient's ability to convert these amino acids into tissue proteins, including antibodies.

Closure of Colonic Stoma.—Dixon and Benson report 102 consecutive cases in which succinylsulfathiazole and sulfathiazole were employed while the patients were hospitalized for closure of colonic stomas. In order to obtain an unbiased evaluation of the results of this treatment, three other groups of cases have been considered. Group 2 included 102 consecutive cases in which no sulfonamide drug was used. Group 3 included 40 cases in which only sulfanilamide was employed. Group 4 embraced 30 cases in which only sulfathiazole was administered. The authors stress that the oral administration of succinylsulfathiazole and the local application of sulfathiazole to the operative wound have greatly improved the results obtained in closure of colonic stomas. Infection of the operative wounds occurred in 84 per cent and a fecal fistula developed in 30 per cent of a series of 102 cases in which no sulfonamide drug was employed, whereas infection of the wounds occurred in only 13 per cent and a fecal fistula occurred in only 2 per cent of 102 cases in which a combination of succinylsulfathiazole and sulfathiazole was administered. These improvements are in large part attributable to the new chemotherapeutic agent succinylsulfathiazole, and they indicate the usefulness of this drug in surgical diseases of the lower intestinal tract.

Archives of Neurology and Psychiatry, Chicago

52:255-340 (Oct.) 1944

- Head Injury: Study of Patients with Chronic Post-Traumatic Complaints. W. D. Ross and F. L. McNaughton.—p. 255.
- Electroencephalogram Associated with Epilepsy. F. A. Echlin.—p. 270.
- *Electroencephalogram Associated with Chronic Alcoholism, Alcoholic Psychosis and Alcoholic Convulsions. M. Greenblatt, S. Levin and F. di Cori.—p. 290.
- Hypothalamus and Affective Behavior in Cats: Study of Effects of Experimental Lesions, with Anatomic Correlations. M. D. Wheatley.—p. 296.
- Motor Nerve Function with Lesions of Peripheral Nerves: Quantitative Study. A. M. Harvey and S. W. Kuffler.—p. 317.
- Electric Shock Therapy: Clinical, Biochemical and Morphologic Studies. S. Katzenbogen, A. K. Baur and A. R. M. Coyne.—p. 323.

Electroencephalogram in Alcoholism.—Greenblatt and his associates studied the electroencephalograms and clinical histories of 157 patients with chronic alcoholism with and without psychosis, including patients with convulsions due to chronic alcoholism. They found that the incidence of electroencephalographic abnormality in patients with chronic alcoholic disorders increases with age. Persons with chronic alcoholism without psychosis, irrespective of the duration of drinking, show nothing of significance in the electroencephalogram. Chronic alcoholism with psychosis is associated with a higher than normal incidence of electroencephalographic abnormality. The presence of confusion or hallucinations in patients with alcoholic psychosis is frequently associated with electroencephalographic abnormality, and the disappearance of hallucinations or confusion is often accompanied by a change toward a more normal electroencephalogram. No evidence of paroxysmal dysrhythmia was found in 5 patients with pathologic intoxication, although 3 of the 5 patients had abnormal electroencephalograms. The highest incidence of electroencephalographic abnormality was found among those with deterioration or Korsakoff's syndrome. No specific electroencephalographic pattern was found in 4 patients with Korsakoff's psychosis. A relatively low incidence of electroencephalographic abnormality was found in 24 patients with "rum fits" (with a negative history for epilepsy and with seizures occurring only in association with alcoholism). On the other hand, a relatively high incidence of electroencephalographic abnormality was found in patients with idiopathic epilepsy with onset of seizures in the same age range as that of the patients with "rum fits." The authors conclude that an abnormal electroencephalogram may be of aid in predicting the duration of illness in patients hospitalized for chronic alcoholism.

Archives of Otolaryngology, Chicago

40:233-332 (Oct.) 1944

- Development of Organ of Corti in Relation to Inception of Hearing. O. Larsell, E. McCrady Jr. and J. F. Larsell.—p. 233.
- Indications, Procedures and Results in Surgical Management of Mastoiditis: Review of 33 Cases. D. G. Voorhees.—p. 249.
- Bilateral Acoustic Neuritis: Review of Literature and Report of Case. M. R. Johnson.—p. 261.
- *Reduced Atmospheric Pressure as Form of Treatment for Paranasal Sinusitis. D. B. Butler, G. J. Greenwood and A. C. Ivy.—p. 266.
- Total Laryngectomy: Simplified Technics with Use of Special Clamp Which Makes Possible Removal of Larynx and Preepiglottic Space Without Opening the Pharynx. E. Vasconcelos and P. deM. Barretto.—p. 275.
- Physical Characteristics of Some Bone Oscillators Used with Commercially Available Audiometers. F. M. Grossman and C. T. Molloy.—p. 282.
- Fissural Cysts. H. C. Rosenberger.—p. 288.
- Neurinoma of Facial Nerve. R. M. Bogdasarian.—p. 291.

Reduced Atmospheric Pressure for Sinusitis.—In the past two years Butler and his associates used the decompression method for 125 patients with subacute and chronic sinusitis. All the patients had symptoms attributable to sinusitis and the majority had been referred to the authors after measures such as surgical treatment, lavage, siphonage, vaccine injections and diathermy had failed. No patients with acute sinusitis have been included in the series. The average duration of the sinus disease in the patients studied was 9.5 years. Treatments were administered in a large decompression chamber of the type currently used for studies of aviation medicine. The pressure was rapidly reduced to 522.6 mm. of mercury, the equivalent of ascent to an altitude of 10,000 feet. The rate of the "ascent" was 5,000 feet per minute. On reaching the pressure at 10,000 feet recompression ("descent") was begun, but at the much slower rate

of approximately 700 feet per minute. Rapid "ascent" to 10,000 feet was alternated with slow "descent" to 5,000 to 6,000 feet for a period of forty minutes, and then slow "descent" to ground level completed the treatment. Patients were treated twice a week. Altogether, 2,259 treatments were given to the group—an average of 18.1 treatments per patient. At the conclusion of their course of treatment 89.5 per cent of the 125 patients experienced subjective improvement. Of 29 patients who were followed by serial x-ray studies after instillation of radiopaque oils, 17 showed improvement in the roentgenogram after the decompression treatments. Of 42 patients who were studied by repeated rhinologic examinations, 30 showed improvement in their sinus condition after being treated by decompression.

Bull. of the U. S. Army Med. Dept., Washington, D. C.

82:1-122 (Nov.) 1944

- Secondary Suture of War Wounds. H. Wilson and F. D. Threadgill.—p. 77.
- Orientation Data Regarding Psychoneurosis. F. G. Ebaugh.—p. 81.
- *Plasmochin Intoxication. J. B. West and A. B. Henderson.—p. 87.
- Anterior Acrylic Dowel Crown. F. W. Stevens.—p. 100.
- Spontaneous Pneumothorax in Soldiers. P. P. Pease, L. G. Steuer and A. S. Chapman.—p. 102.
- Lumbar Puncture Headaches. M. J. Levin.—p. 107.
- Bacteriologic Study of Mess Equipment. A. F. Sellers and G. H. Gowen.—p. 111.

Plasmochin Intoxication.—West and Henderson report observations on 846 cases of malaria caused by *Plasmodium falciparum*. All patients were hospitalized. Therapy consisted of 10 grains (0.65 Gm.) of quinine sulfate three times daily after meals for three days, or until the temperature was controlled, followed by atabrine 1½ grains (0.1 Gm.) three times daily after meals for five days. Complete blood cytologic examination of each patient was done at the completion of eight days of therapy, and no patient was discharged from the hospital until three consecutive negative smears had been reported and the erythrocyte count was above 4 million. After a rest period of two days each patient was placed on plasmochin 0.01 Gm. three times daily after meals for five days. All of the 846 patients with malarial fever received plasmochin treatment and 24 were readmitted to the hospital suffering from complaints which were believed to have resulted from plasmochin intoxication. Of these 24 patients, 2 had experienced four previous attacks of malarial fever each. Plasmochin had been administered to these 2 patients after each previous attack without untoward reactions. The remaining 22 patients had not previously been infected with malaria. The sign-symptom complex presented by these patients was not duplicated by patients not having received plasmochin. The complex consisted of jaundice, abdominal pains, headache, nausea and vomiting. Other symptoms were hyperexcitability, both subjective and objective, dizziness, stiffness and pains in the joints, low back pains and eructations of gas. Therapy was supportive and expectant. Forced fluids, including reconstituted plasma and isotonic solution of sodium chloride with 5 per cent glucose, were administered in the severe cases by venoclysis, and alkalization was a routine measure. All patients recovered. Previous history of yellow fever inoculations in all of the patients suggests the possibility of such inoculations having had some influence on the incidence of plasmochin intoxication. The authors arrive at the following conclusions: 1. Plasmochin is potentially a highly toxic drug when administered in large doses. 2. Plasmochin may produce varying degrees of secondary anemia. 3. There is no relationship between the number of previous attacks of malaria, the parasitic index and the incidence of plasmochin intoxication. 4. The individual reaction to plasmochin is inconstant and unpredictable. 5. The untoward results of plasmochin are not permanent, but convalescence is protracted. 6. The dosage of 0.01 Gm. of plasmochin twice daily for two days is sufficient in most instances to render the blood of a malarial patient noninfectious for mosquitoes and is simultaneously a safe dosage from the standpoint of potential toxicity.

Delaware State Medical Journal, Wilmington

16:147-162 (Sept.) 1944

- Treatment of Varicose Veins and Ulcers. W. H. Erb.—p. 147.
- Eastern Shore Broiler Industry and Its Problems. J. L. Cherry.—p. 149.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

19:99-144 (Sept.) 1944

- *Treatment of Celiac Disease with Vitamin B Complex and Concentrated Liver. D. Paterson, M. Pierce and Eleanor Peck.—p. 99.
Atrophic Sclerosis of Cerebral Cortex Associated with Birth Injury. R. M. Norman.—p. 111.
Prognosis and Treatment of Pneumonia in Children. F. L. K. Lewis.—p. 122.
Observations on Otitis Media and Mastoiditis in Infancy. E. C. R. Couper.—p. 126.

Vitamin B and Liver in Celiac Disease.—Certain aspects of the disease, according to Paterson and his co-workers, suggest that it may be a deficiency syndrome and that the vitamin B complex may be involved. The similarity of certain symptoms to those encountered in nontropical sprue and in the chronic vitamin B deficiency syndrome of adults seems significant. Celiac disease appears to be six or seven times more prevalent in the British Isles since the outbreak of war in September 1939. Because of the problems related to the dietary treatment of celiac disease under wartime conditions, the views of May et al. attracted much attention. They advocated a normal, balanced diet, supplemented by vitamins A, C and D, combined with the parenteral administration of crude liver and vitamin B complex. Twenty-six patients with idiopathic celiac disease and 4 patients with the celiac syndrome were treated by Paterson and his co-workers with liver extract given parenterally and vitamin B complex given parenterally and orally. Satisfactory gains in weight and height, and improvement in general health were obtained in the early weeks of treatment and sustained over a period of months in the patients who received sufficiently intensive and prolonged therapy. Less dramatic improvement and less satisfactory weight gains resulted when the parenteral liver extract was given in conjunction with an oral instead of a parenteral vitamin B complex preparation. The children thrived on a normal balanced diet during or after the initial weeks of treatment. The total stool fats improved in all but 4 cases and returned to normal in 18 of 26. Slow improvement was commonly associated with the occurrence of upper respiratory infections. In the secondary type of the disease the "celiac syndrome," resulting from chronic foci of infection, improvement appeared to be hastened by intensive therapy with liver and vitamin B complex.

Journal of Physiology, Cambridge

103:137-252 (Sept. 29) 1944

- Effect of Morphine and Hyoscine on Dye Concentration Curves in Plasma Volume Determination. R. G. Bowler, A. C. Crooke and C. J. O. R. Morris.—p. 137.
Behavior of Cervix Uteri in Vivo. J. Adler, G. H. Bell and J. A. C. Knox.—p. 142.
Excretion of Histamine in Urine. G. V. Anrep, M. S. Ayadi, G. S. Barsoum, J. R. Smith and M. M. Talaat.—p. 155.
Cation Antagonism in Blood Coagulation. G. D. Greville and H. Lehmann.—p. 175.
Isolation and Identification of Pressor Base from Normal Urine. Mary F. Lockett.—p. 185.
Further Observations on Effects of Alloxan on Pancreatic Islets. J. S. Dunn, E. Duffy, M. K. Gilmour, J. Kirkpatrick and N. G. B. McLetchie.—p. 233.
Hyperpnea in Man Produced by Sudden Release of Occluded Blood. J. N. Mills.—p. 244.

Lancet, London

2:491-520 (Oct. 14) 1944

- *Desert Climate: Physiologic and Clinical Observations. W. S. S. Ladell, J. C. Waterlow and M. F. Hudson.—p. 491.
*Treatment of Staphylococcal Infections with Penicillin by Intermittent Sterilization. J. W. Bigger.—p. 497.
Ovarian Fibroma with Ascites and Hydrothorax (Meigs's Syndrome). R. H. Gardiner and V. Lloyd-Hart.—p. 500.
Hereditary Familial Telangiectasis with Epistaxis and Migraine. A. M. G. Campbell.—p. 502.
Congenital Syphilis with Obscure Initial Signs. C. P. LaPage.—p. 503.

Desert Climate.—Ladell and his collaborators outline observations made in southern Iraq on British army personnel. Physiologic and biochemical observations were made each week from May to October on 24 soldiers. These were to serve as controls for similar observations made on men suffering with

the effects of heat. All of the fit men lost some weight. The loss was greatest in those who had the highest chloride concentrations in their sweat. It is suggested that this loss was due to a minor degree of salt deficiency dehydration. Salt deficiency dehydration was indicated by low urine output in spite of a high water intake, low urinary chloride output and raised blood urea. The blood pressure fell as the weather grew hotter. Twelve cases of hyperpyrexia are described. The onset was acute, with absence of sweating and loss of consciousness. These patients all went through a phase of apparent negative water balance; they excreted large quantities of dilute urine at a time when they were drinking little. During this phase the chloride content of the blood was diminished. These findings support the view that hyperpyrexia is accompanied by superhydration. Two distinct types of heat exhaustion were observed. Patients with type 1 heat exhaustion were seen mainly in the first half of the summer. Vomiting and cramps were common. The patients were pale, collapsed and sweating profusely. The blood pressure was occasionally low, but the most consistent abnormality was reduction in pulse pressure; on standing, syncope occurred. Heat exhaustion type 1 was a salt deficiency dehydration; plasma and whole blood chlorides were grossly diminished, hemoglobin and plasma protein were raised, blood urea was high, extracellular fluid and plasma volumes were diminished, and the urine was scanty, of high specific gravity and almost free from chloride. Treatment of these patients consisted in replacement of salt and water. There is evidence that type 1 heat exhaustion occurs in persons who habitually secrete sweat containing a much higher concentration of chloride than the average; their salt intake is inadequate at high rates of sweating, and they become salt deficient. Prevention of these cases might be achieved by increasing the salt intake. Any man who is consistently losing weight and is excreting a concentrated urine with low or absent chloride should be given extra salt. Cases of heat exhaustion type 2 were seen only in the second half of the summer among men who had already come through the hottest weather unscathed. Clinically they were characterized by defective sweating and polyuria; the skin showed prickly heat in the healing and desquamating stage. These patients were salt deficient, but not so grossly as those of type 1, and they were not dehydrated. During convalescence they secreted a sweat with a high concentration of chloride. Signs of a similar breakdown were found in some of the fit men in that during the second half of the summer their sweat was richer in chloride than it had been during the first half. The incidence of heat exhaustion type 2 could probably be reduced if men—particularly those suffering from severe prickly heat—were given a break of a few days in a cooler climate after eight weeks' continuous exposure to extreme desert conditions.

Treatment of Staphylococcal Infections with Penicillin.—Bigger says that results obtained by him strongly oppose the commonly accepted belief that penicillin is merely bacteriostatic. He cites observations which justify the statement that penicillin is bactericidal for *Staphylococcus pyogenes*. The author further shows that failure of penicillin to sterilize broth containing *Staphylococcus pyogenes* is due to the survival of a small number of staphylococci called persisters. It is believed that persisters are insensitive to penicillin because they are temporarily in a nondividing phase and because penicillin kills only bacteria which are about to divide. Unlike resistant strains, descendants of persisters are easily killed by penicillin. Penicillin fails to cure staphylococcal infections in the body because some of the cocci are in the persister phase. A scheme of treatment in which penicillin is alternately administered and withheld is suggested in the hope that bacteria in the persister phase will divide during an intermission and be killed by penicillin when its administration is recommenced. The details of treatment must depend on clinical trials, but it is suggested that the first treatment should extend to four days and subsequent treatments to two days. It is difficult to decide on the optimum duration of intermissions. If too short, only a few persisters may have resumed their activities. If too long, a fresh infection may have begun. A tentative scheme suggested by the author provides that the first two intermissions should last one day each, the other two, however, two and three days respectively.

Book Notices

Manual of Military Neuropsychiatry. Edited by Harry C. Solomon, M.D., Professor of Psychiatry, Harvard Medical School, Boston, and Paul I. Yakovlev, M.D., Clinical Director, Walter E. Fernald State School, Waltham, Mass. With the collaboration of Wilfred Bloomberg, Lt. Col., M. C., A. U. S., et al. Cloth. Price, \$6. Pp. 764, with illustrations. Philadelphia & London: W. B. Saunders Company, 1944.

Essays from forty-five contributors dealing with the various aspects of military neuropsychiatry have been assembled by the editors into a compact and attractive volume which is intended for use principally by medical officers of the armed forces stationed where adequate reference material may not be available. The contents are divided into (1) introduction, (2) induction, (3) administration and disposition, (4) clinical entities, (5) prophylaxis and therapy and (6) special topics. The reported organization of the neuropsychiatric examination at the induction station is based chiefly on experiences of the authors at the Boston Induction Station. The differences in the administration and disposition of the neuropsychiatric cases in the Army, Navy and Merchant Marine are well presented. Description and discussion of the common clinical neurologic and psychiatric entities are given in clear concise language in part 4. This section is somewhat weakened by a lack of presentation of clinical entities which seem peculiar to the different military groups during or following combat. The editors comment that most of these clinical entities are essentially the same, whether they occur in a soldier or in a civilian. Many other authorities in the field would not agree to such an opinion, and a good deal of factual information has been collected to show that there are often gross differences in the types of mental illness commonly seen in the soldier and in the civilian. Prophylaxis and therapy are adequately presented and include an excellent discussion of the will to fight. Special topics presented in part 6 include the neuropsychiatric aspects of tropical diseases, disorders incident to the tropics, hazards of flying, convoy and torpedo casualties, experiences of foreign armies and a clinical discussion of cerebrospinal fluid and electroencephalography.

Orthopedic Surgery. By Walter Mercer, M.B., Ch.B., F.R.C.S., Assistant Surgeon, Royal Infirmary, Edinburgh. With a foreword by Sir John Fraser, Bart., K.C.V.O., M.D., Regius Professor of Clinical Surgery in the University of Edinburgh. Third edition. Cloth. Price, \$12. Pp. 947, with 415 illustrations. Baltimore: William Wood & Company, 1943.

To those who have read the first edition of this treatise the appearance of a third will serve as additional proof of its popularity. Important additions have been made in the chapters on circulatory disturbances, disorders of the back, knee, shoulder and foot, and infections of the hand. These additions have helped to bring the book up to date.

One cannot but help being impressed, as one reads, with the scope and importance of modern orthopedic surgery. Mercer has included not only diseases of the bones, muscles and tendons but also those of the nerves and blood vessels. In other words, orthopedic surgery now includes practically all extremity surgery and, in addition, many important diseases of the trunk. To cover all of these subjects adequately in a volume of 900 pages is an almost impossible task. Dr. Mercer has done an excellent piece of work, considering the inherent difficulties which he faced.

It must be constantly borne in mind that only an outline can be given and that for the successful practice of orthopedic surgery the details of the picture must be filled in by a thorough knowledge of the compendious current literature. Were the author to attempt to include a discussion of the numerous divergent views regarding diagnosis and therapy, the volume would become so bulky as to make publication almost impossible. Brevity must therefore replace the details of the highly specialized studies dealing with single phases of orthopedic surgery. This essential limitation of the book makes itself particularly evident in such chapters as the one on bone tumors, where the diagnosis rests on accurate knowledge of numerous details. In other chapters, such as the one on tuberculosis, this difficulty does not make itself as keenly felt.

For the general practitioner, as well as for the general surgeon, this book is of particular value.

A Concise Pharmacology and Therapeutics of the More Important Drugs. Together with an Introduction to the Art of Prescribing. By F. G. Hobart, Ph.C., Head of the Pharmaceutical Department, Westminster Hospital, London, and G. Melfon, M.D., M.R.C.P., Senior Physician, Dudley Road Hospital, Birmingham. With a foreword by Sir Adolphus Abrahams, O.B.E., M.A., M.D. Second edition. Cloth. Price, 12s. 6d. Pp. 168. London: Leonard Hill, Ltd., 1944.

According to the authors, this book is intended "only to discuss the action of drugs in relation to practical therapeutic considerations" and "represents an attempt to present concisely, but in sufficient detail, the pharmacology of the more important drugs used in the British Commonwealth and the United States of America." Unfortunately, the authors have made such a concise presentation that the value of the book is lessened. It is not suitable for medical students unless supplemented by the better known textbooks on pharmacology and therapeutics. Errors are occasionally seen. For example, the authors state that mild silver protein is a preparation similar in character to strong silver protein but it contains a considerably smaller proportion of silver. Apparently it has been forgotten that the adjectives "strong" and "mild" refer to the therapeutic action, as made evident by the degree of ionization, and not to the total silver content. Also there are not included a few of the more well known new drugs. For instance, in the sulfonamide section, sulfamerazine and sulfapyrazine are not included.

For those who like to maintain complete libraries the book may provide some additional value, as it supplies a list of proprietary names and nonproprietary equivalents presumably in England. The number of names in this list is almost three hundred.

Practical Occupational Therapy for the Mentally and Nervously III. By Louis J. Haas, F.A.A., O.T.R., Director, Men's Therapeutic Occupations, The New York Hospital, Westchester Division, White Plains, N. Y. Cloth. Price, \$6. Pp. 432, with 356 illustrations. Milwaukee: Bruce Publishing Company, 1944.

This edition is evidently arranged primarily for the occupational therapy worker in mental hospitals. Over half the book is devoted to techniques of various crafts; another portion is devoted to the operation of the occupational therapy department, while a smaller part is used for the excellent portrayal of history and theory of occupational therapy as applied to mental patients. Although it is not suitable as a textbook in schools of occupational therapy, the book will serve as a source of inspiration for the many therapists in mental hospitals. Physicians and administrators will find this volume helpful in gaining a working knowledge of occupational therapy and its uses in treating mental patients. Commendable features are the bibliographies at the end of the chapters and the use of case history reports to demonstrate principles. These features clarify the theory and emphasize the practical applications of occupational therapy.

Manual of Human Protozoa with Special Reference to Their Detection and Identification. By Richard R. Kudo, D.Sc., Associate Professor of Zoology, The University of Illinois, Urbana. Cloth. Price, \$2. Pp. 127, with 29 illustrations. Springfield, Ill. & Baltimore: Charles C Thomas, 1944.

This manual is made up from the laboratory notes of an emergency course given at the University of Illinois. It contains brief descriptions and diagnostic figures of the Protozoa found in the digestive tract, circulatory system and tissues of man. Techniques for their preparation for microscopic examinations are also given. Keys for the differential diagnosis of the intestinal amebas and flagellates are provided. The illustrations are excellent but too limited for critical work on the life cycles of some species. It is a convenient handbook for use in the clinical laboratory.

Studies on Immunisation. Second Series with Appendices Dealing with Anti-Typhoid Inoculation, Chemo-Therapy and Statistical and Other Operations of Induction. By Sir Almroth E. Wright, M.D., F.R.S., Director of the Inoculation Department and Principal of the Institute of Pathology and Research, St. Mary's Hospital, London. [Reprints.] [Researches from the Inoculation Department, St. Mary's Hospital, 1V.] Cloth. Price, 25s. Pp. 256, with illustrations. London: William Heinemann, Ltd., 1944.

This is another volume of "collected researches" from the inoculation department of St. Mary's Hospital in London. Besides the appendices it contains reprints of nine articles on vaccine therapy, on prophylactic inoculation against pneumonia, on tuberculous disease and on immunity published at various times between 1910 and 1942.

Queries and Minor Notes.

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

EXPOSURE TO ALUMINUM DUST

To the Editor:—A physician has recently made the statement that an attack of acute bronchitis in an industrial worker was due to exposure to aluminum dust suspended in the atmosphere to which the employee is subjected in the course of his work, citing the presence of aluminum dust particles in the sputum as confirmatory etiologic evidence. Is there any valid evidence that aluminum dust, per se, may act either chemically or mechanically to excite an attack of acute bronchitis or other respiratory infection? I should appreciate a list of references dealing with this subject.

W. N. Dawson, M.D., Moryville, Tenn.

ANSWER.—American medical literature contains no convincing evidence of pulmonary or bronchial injury from exposure to aluminum dust. Occasional roentgenograms showing variable degrees of minor abnormality have been presented as evidence of a specific pneumoconiosis due to aluminum. However, the only report of any group survey in this country is by Crombie, Blaisdell and McPherson (*Canadian M. A. J.* 50:318 [April] 1944). They report no abnormal x-ray observations other than a few cases of healed tuberculosis in 125 men exposed to high concentrations of metallic aluminum powder from six to twenty-three years, with an average of twelve years. Certain German investigators have believed that there is a hazard, although available abstracts of their papers do not contain sufficient information on which to evaluate their conclusions. Goralcwski and Kaeger (*Arch. Gewerbepath. u. Gewerbehyg.* 11:102, 1941) state that inhalation of aluminum produces rapidly developing disease that may terminate fatally after eight months of exposure. These authors cite 4 cases presenting x-ray appearances "similar to silicosis" exposed one and a half to sixteen years with dyspnea, in 3 of which spontaneous pneumothorax developed. Koelsch, a competent and experienced industrial hygienist, opposes the view of a specific chemical poisoning. Summarizing his observations on 150 such workmen (*Beitr. z. Klin. d. Tuberk.* 97:688, 1942) he concludes that poor ventilation incident to the blackout and excessive hours of work in young persons is responsible for the abnormal x-ray observations. His opinion of the nature of the condition is not quoted in abstract. Finally Jötten and Eickholt (*Reichsarbeitsblatt*, part III, No. 32, 1942, *Arbeitsschutz* No. 11) report animal experiments to prove that inhalation over a period of two hundred and thirty-six days results in heavy accumulations of dust in the lungs and associated lymph nodes with "desquamation of alveolar epithelium" and ultimate necrosis of the masses of cells. However, it required superimposed infection with the type I pneumococcus to produce much effect on the pulmonary stroma. Their illustrations strongly suggest the nonspecific reaction that can be produced by excessive concentrations of almost any inert dust. Gardner, Dworski and Delahant (*J. Indust. Hyg. & Toxicol.* 26:211 [Sept.] 1944) did not observe serious effects from prolonged daily inhalations of metallic aluminum or amorphous aluminum hydrate. Injection of excessive quantities of the former into the blood stream blocked the mononuclear phagocytes, so that susceptibility to tuberculosis was increased. Smaller amounts did not have injurious action.

A recent paper by Hunter, Milton, Perry and Thompson (*Brit. J. Indust. Med.* 1:159 [July] 1944) on the effects of aluminum and alumina on the lungs in grinders of durafum airplane propellers indicates no evidence of pulmonary fibrosis in 92 workers. The films of 7 of the operators revealed certain abnormal shadows in the periphery of the lung fields but these "were not related to symptoms." Their exposure was heavy and 37 of the group had been employed for more than five years. The operation involved grinding and polishing the metallic alloy with aluminum oxide paper. It was the latter which constituted the major portion of the air borne dust; the metallic particles were so large that they settled and few remained suspended in the air.

INSUFFLATION TECHNIC FOR OVIDUCTS

To the Editor:—Would it be safe to use a regular Jarcho Pressometer in the tubal insufflation using atmospheric air after proper sterilization of the apparatus and filtration of the air through sterile cotton placed in the graduated container? I have used this method for pneumothorax therapy but have not heard of the use of a similar technic in tubal insufflation.

A. E. Drexel, M.D., Alexandria, Va.

ANSWER.—Yes, it is absolutely safe.

TOXICITY OF CINCHOPEN

To the Editor:—Please forward information on the toxicity of cinchopen. It has been stated that toxic symptoms develop only several months after taking the drug. Is this possible after taking only one or two doses of 7½ grains each? In other words, can cirrhosis or acute yellow atrophy of the liver develop in two or three months with no intermediate toxic symptoms? Are toxic symptoms infrequent enough to warrant the use of the drug at any time?

Major, M. C., A. U. S.

ANSWER.—A difference of opinion exists concerning the toxicity of cinchopen. Palmer and Woodall (*Cinchopen—Is There a Safe Method of Administration?* *THE JOURNAL*, Sept. 9, 1936, p. 760) in a review of the literature collected 191 cases of jaundice with a mortality of 46.8 per cent following the administration of cinchopen or its derivatives. In some instances small doses caused death; in contrast, large amounts have frequently been given for long periods without ill effects, and some physicians have used cinchopen extensively without having observed any fatalities from its use. The initial symptoms of hepatitis have frequently not appeared for weeks or months after the discontinuance of the drug; in these cases other causes for the hepatitis cannot be entirely excluded. Palmer and Woodall consider that these two factors, the variable relationship between the total dosage and the outcome and the variable length of time between the use of the drug and the appearance of symptoms, account for the varied opinions. Apparently even small doses of the drug given for brief periods may prove fatal, and hence one cannot rely on close observation with withdrawal of the drug on the first appearance of symptoms, for the hepatic injury frequently continues to progress. Palmer and Woodall conclude that there is no safe method for the administration of cinchopen.

BOILS ASSOCIATED WITH MENSTRUAL PERIOD

To the Editor:—A patient has boils within the gluteal folds at each menstrual period. They appear nowhere else on the body and only when the flow is well established. She is 30 years of age and has had the boils for the past twelve years. What is the cause of these boils; are there any references in the literature to the subject?

W. A. Brand, M.D., Redwood Falls, Minn.

ANSWER.—It is difficult to explain the exact relationship between the boils and the menstrual periods; therapy is unsatisfactory in cases like this. Hormone treatment helps a few women but by no means the majority. A simple medication which can be tried is ammonium chloride. Greenhill and Freed have shown how beneficial this substance is in cases of premenstrual tension including localized and generalized edema. The dose is 15 grains (0.97 Gm.) three times a day to be taken after meals for fourteen days before the onset of the next menses. During the time the patient takes the ammonium chloride, she should omit all sodium from her diet; this includes not only table salt but also alkalis, such as sodium bicarbonate.

NUMBER OF CENTENARIANS

To the Editor:—What percentage of people (men and women) in the United States have lived to be one hundred years or more?

J. P. Young, M.D., Chester, S. C.

ANSWER.—According to the returns of the 1940 Census, there were in the United States 3,679 persons 100 years old and over, of whom 1,338 were men and 2,341 women. Of these, 1,411 were white and 2,268 were nonwhite. Although the 1940 figure represents a decrease as compared with the 1930 return of 3,964 centenarians, comprising 1,180 whites and 2,784 nonwhites, the 1940 returns still undoubtedly exaggerate the number. Because persons of advanced age sometimes knowingly report themselves to the enumerator as older than they actually are or, not knowing their true ages, make exaggerated guesses, the reported number of centenarians is no doubt too high, particularly in the nonwhite population.

PARATYPHOID INFECTION

To the Editor:—I have a proved case of paratyphoid B infection with mild complaints. What can be done to cure the patient and protect her family? What can be done to prevent her from being a carrier?

A. L. Henrichsen, M.D., Von Nuys, Calif.

ANSWER.—In this case of paratyphoid B infection the assumption is made that the disease is caused by *Salmonella schottmulleri*. The treatment of this disease is the same as that for typhoid. Triple typhoid-paratyphoid vaccine may be given to contacts in the attempt to increase their resistance to this infection. A course of treatment with sulfadiazine may be instituted in an attempt to clear the carrier state. However, the sulfonamides have not been adequately tested in the treatment of *Salmonella* infections.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 127, No. 4

CHICAGO, ILLINOIS
COPYRIGHT, 1945, BY AMERICAN MEDICAL ASSOCIATION

JANUARY 27, 1945

TICK BORNE TULAREMIA

REPORT OF FIFTEEN CASES

MAJOR GEORGE V. BYFIELD
CAPTAIN LAWRENCE BRESLOW
CAPTAIN ROLAND R. CROSS JR.

AND

CAPTAIN NOEL J. HERSHEY
MEDICAL CORPS, ARMY OF THE UNITED STATES

Tularemia is an acute infectious disease caused by *Bacterium tularensis* (*Pasteurella tularensis*). The disease was discovered in 1910 by Dr. George W. McCoy of the United States Public Health Service. The original investigative work on this "plague-like disease of rodents" was carried out on ground squirrels in Tulare County, Calif—hence the name tularemia. This disease later was found to be present in man and is identical with the "deer fly fever" of man found in Utah.¹ Many cases of human tularemia have been reported. Usually the source of the infection is not difficult to determine.

Tularemia "occurs under natural conditions in over twenty kinds of wild life, especially in wild rabbits and hares. Man becomes infected by contact of his bare hands with the raw flesh and blood of these animals or by bites of blood sucking ticks and flies which have previously fed on animals infected with *Bacterium tularensis*."² Experimental transmission of tularemia by mosquitoes has been reported.³

In 1924 Parker⁴ reported that the tick could serve as a carrier of tularemia. Francis cultivated *B. tularensis* from guinea pigs which had been injected with ground-up wood ticks (*Dermacentor andersoni*). At that time the data seemed to indicate the possibility of transmission of tularemia from tick to man. Generation to generation transmission of the infection in both *Dermacentor andersoni*⁵ and *Dermacentor variabilis*⁶ has been reported. Interstadial transmission of the infection has been demonstrated in *Amblyomma americanum*.⁴ Since 1924 many cases of tularemia have been reported in which ticks were suspected or proved to have been the transmitting agents.⁷ The ticks more

commonly involved in transmission of human tularemia include *D. andersoni* (the wood tick) and *D. variabilis* (the common dog tick). *A. americanum* (the lone star tick),⁴ *Dermacentor occidentalis*⁷ and *Ixodes ricinus californicus* (Banks)⁸ have been referred to as carriers. The rabbit tick *Hemaphysalis leporis-palustris*¹ is of importance only in transmission of the disease among rabbits.

"Seasonal incidence of cases of tularemia is due to the seasonal variation of three sources of infection—tick bite, fly bite and the dressing of wild rabbits; but, owing to the overlapping of these influences, cases have occurred in the United States in every month of the year."¹ In the Eastern part of the United States the dressing of wild rabbits causes most cases during the months of November and December. Tularemia caused by fly bites occurs principally from June through September. Tularemia caused by tick bites of *D. andersoni* occurs principally from March through August and of *D. variabilis* from January through October.

Of the 600 cases of tularemia reviewed by Foshay⁹ in 1940, 6 were attributed to tick bites. Francis¹⁰ in 1941 reported a total of 53 cases of tularemia in Montana and surrounding states caused by *D. andersoni* and 73 cases principally in the Southern states caused by *D. variabilis*. In addition to these two reports, a review of the literature reveals 20 cases of tick borne tularemia, some of which may have been included by Foshay and Francis.¹¹

All cases herein reported were in soldiers admitted to an evacuation hospital which was receiving patients in a maneuver area in Tennessee. All were admitted between the dates of May 14 and June 12, 1943, a period of thirty days. During operations such as these, soldiers are outdoors almost continuously, sleep on the ground in pup tents and frequently are located in

7 Levin, S. L. Transmission of Tularemia Due to Tick Bite, South. M. J. 34:1169-1172 (Nov.) 1941.

8 Davis, G. E., and Kohls, G. M. *Ixodes Ricinus Californicus* (Banks) as Possible Vector of *B. Tularensis*, Pub. Health Rep. 52:281-282 (March 5) 1937.

9 Foshay, L. A Summary of Certain Aspects of Tularemia Including Methods for Early Diagnosis and Results of Serum Therapy in 600 Patients, Medicine 19:183 (Feb.) 1940.

10 Cecil, R. L. Textbook of Medicine, ed. 5, Philadelphia, W. B. Saunders Company, 1940, p. 371.

11 Moss, R. E., and Evans, L. R. Cases of Tularemia Contracted on Cape Cod, New England J. Med. 222:885-887 (Nov. 28) 1940. Shaffer, J. H. Four Cases of Tularemia with Unusual Contacts, Ann. Int. Med. 18:72-80 (Jan.) 1943. Pearson, G. W. Interesting Cases of Tularemia, Tri-State M. J. 13:2708-2714 (March) 1941. Perret, J. M.: A Study of 69 Cases of Tularemia, New Orleans M. & S. J. 88:694-702 (May) 1936. Werling, E. H. Ten Cases of Tularemia, J. Oklahoma M. A. 35:103-106 (March) 1942. Kennedy, J. A. Pulmonary Tularemia: Discussion of Disease as a Clinical Entity, with Report of Three Cases, J. A. M. A. 118:781-787 (March 7) 1942. Blackford, S. D., and Casev, C. J. Pleuropulmonary Tularemia, Arch. Int. Med. 67:43-71 (Jan.) 1941. Fahr, G. Tularemia Following Wood Tick Bite, Minnesota Med. 16:634-635 (Oct.) 1933. Brown, E. G., Latimore, J. L., and Hofmann, J. C. Summary of 120 Cases in Kansas, J. Kansas M. Soc. 34:296-302 (Aug.) 1933. Pasternack, J. G. Tularemic Inguinal Buboes Following Tick Bites, J. A. M. A. 112:1814-1817 (May 6) 1939. Levin.⁷

1 From the 27th Evacuation Hospital.

1 Francis, L. Sources of Infection and Seasonal Incidence of Tularemia in Man, Pub. Health Rep. 52:103-113 (Jan. 22) 1937.

2 Phillip, C. B., Davis, G. E., and Parker, R. R. Experimental Transmission of Tularemia by Mosquitoes, Pub. Health Rep. 47:2073-2088 (Oct. 21) 1932.

3 Parker, R. R., Francis, E., and Spencer, R. R. Tularemia Infection in the Ticks of the Species *Dermacentor Andersoni* (Stiles) in the Butterroot Valley, Montana, Pub. Health Rep. 39:1057-1073 (May 9) 1924.

4 Parker, R. R. Recent Studies of Tick Borne Diseases Made at the United States Public Health Service Laboratory at Hamilton, Montana, Proc. Fifth Pacific Sc. Cong., 1933, pp. 3370-3371.

5 Phillip, C. B., and Jennison, W. I. American Dog Tick, *Dermacentor Variabilis* as Host of *Bacterium Tularensis*, Pub. Health Rep. 19:186-192 (March 23) 1934.

6 All the references in footnote 11, also Foshay⁹ and Cecil.¹⁰

wooded terrain. All patients had been located in a relatively small area.

Ten patients had definite histories of a tick bite. Most of the patients had a history either of removing ticks which had become attached to their skin, of

remarkable was noted except the general appearance of the skin and the presence of characteristic tularemic lesions. The skin of most patients gave evidence of multiple "insect" bites, attributed to chiggers, mosquitoes, ticks or a combination of these.

The lesions of tularemia, the "punched out" or ragged ulcers and the regional lymphadenopathy varied in location. The earliest tularemic lesions noted were areas of skin 2 to 3 cm. in diameter showing central necrosis and ulceration. The ulcers varied in shape, some having regular edges presenting a punched out effect and others having irregular ragged edges. The early ulcer was usually surrounded by a zone of erythema which was destined to undergo partial necrosis, thereby enlarging the ulcer itself (figs. 1 to 4). Nine patients had typical ulcers. They were located on the leg (6 cases), the arm (1 case) and the chest wall (2 cases).

Thirteen patients had large masses of tender regional lymph nodes, and of these 9 were inguinal or sub-inguinal and 4 were axillary. In cases 14 and 15 small bilateral inguinal lymphadenopathy was noted and these patients had no tularemic ulcers. The enlarged regional lymph nodes were usually 3 to 6 cm. in diameter and protruded 1 to 3 cm. above the surface of the surrounding skin. They were red, moderately



Fig. 1 (case 9)—Early tularemic lesion of lower extremity

having found ticks crawling on their bodies or clothing or of having seen or removed ticks from the bodies or clothing of fellow soldiers. This information established firmly the presence of ticks in large numbers and gave some indication of the annoyance they caused.

SYMPTOMS

Histories from the patients indicated an interval varying from one to nine days from the known tick bite until the onset of symptoms. The average interval was five days. However, in view of the probability of multiple exposures, limited reliance must be placed on these figures.

The type of onset was variable. Some patients gave a history of a moderately severe chill followed by a fever as high as 104 F., a severe headache, backache, generalized muscular soreness and "soreness of the bones." Other patients had no chill but complained of general malaise and symptoms similar to those noted during the onset of a mild influenza. They complained usually of pain and tenderness in the area of the regional lymphadenopathy.

PHYSICAL FINDINGS

Examination usually revealed febrile patients with normal sensoriums, the acuteness and severity of the illness varying considerably among them. Some showed a moderate degree of dehydration. Otherwise, nothing



Fig. 2 (case 9)—Multiple early tularemic lesions of lower extremity.

firm and, on palpation, varied in their degree of tenderness (fig. 5). Later, in some instances, they became soft and fluctuant as the result of abscess formation.

In case 1 pleural effusion and pneumonia developed. Case 10 showed nuchal rigidity and a positive Kernig's sign. Cerebrospinal fluid was examined and found to be normal. No rashes were noted.

COURSE AND TREATMENT

There were no deaths in our series. The severity of the disease varied widely among the 15 patients. In some instances the disease was a very mild febrile illness; in others it was moderately severe, prolonged

Other than the use of metaphen in 1 case, the surgical drainage of abscesses in 3 cases and the chance use of sulfonamides in 6 cases prior to and 2 cases after admission, no attempt was made to treat the patients other than symptomatically.

COMMENT

The cases we report emphasize the importance of the tick as a cause of human tularemia. The tick, we believe, is too frequently thought of primarily as an intermediate host of Rocky Mountain spotted fever; however, the tick is receiving more recognition in recent literature in connection with Colorado tick fever, American Q fever, tick paralysis and Bullis fever. From a statistical point of view we noted with interest that during the same thirty day period our 15 cases of tularemia were seen only 2 cases of Rocky Mountain spotted fever were admitted to the hospital. Thus tularemia in this particular area was numerically the more prominent of the two tick borne diseases.

In individuals suffering from tularemia due to handling rodents (rabbits principally) the lesions are usually on the upper extremities. In contrast to this, tularemic lesions secondary to the bite of an infected tick are more generalized in distribution, with a predominance of lesions on the lower extremities. In our



Fig 3 (case 6)—Advanced stage of tularemic ulcer of lower extremity.

and debilitating. There was frequently an afebrile period after three or four days followed by a secondary rise in temperature.

In case 1 a pleural effusion and pneumonia developed. Continuous oxygen inhalations were provided and a thoracentesis was performed, 200 cc of dark, straw colored clear fluid being obtained. No other complications occurred.

The leukocyte count varied from normal to a leukocytosis of 16,650 per cubic millimeter. Positive blood agglutinations¹² (complete) ranged from a dilution of 1:320 to 1:1,280, as shown in the table. Diagnostic skin tests were not done. No attempts were made to culture the organism from blood, pleural fluid or pus from incised abscessed glands.

Six patients had received either sulfathiazole or sulfadiazine in varying amounts prior to admission to our hospital. The drug was discontinued on admission. The use of metaphen has been reported by Barthelme.¹³ Ten cc. of a 1:1,000 aqueous solution of metaphen was given intravenously to patient 1 on three consecutive days. We were unable to draw any conclusions as to the beneficial effect of metaphen. Although this type of case usually carries an appreciable mortality, recovery was uneventful in case 1.

In 3 cases abscesses developed in the regional lymph nodes. These became fluctuant and obviously would have drained spontaneously had we not resorted to surgical incision and drainage. This procedure is advisable, we believe, when fluctuation occurs and spontaneous drainage is imminent.



Fig 4 (case 7)—Healing tularemic ulcer of right arm

patients, none of whom had had contact with rodents, the distribution was 9 on the lower extremity and 4 on the upper extremities.

Early in our experience with these cases of tularemia we suspected *D. variabilis* (the dog tick) of being the transmitting agent. Later, however, Dr. Norman H. Topping of the United States Public Health Service

¹² Agglutination tests were performed by Dr. W. C. Williams, Commissioner of Public Health, Nashville, Tenn.
¹³ Barthelme, F. H. Intravenous Therapy for Tularemia. J. Chemotherapy, 1937, 1: 317-320 (Oct.)

carried out a tick survey¹⁴ in an area in which an especially large number of our patients had been bivouacked prior to their illness. He reported that all specimens were *Amblyomma americanum* (the lone star tick).¹⁵ The ticks collected in this survey were tested by Francis¹⁵ and by Parker.¹⁶ Neither was able to demonstrate *P. tularensis* by culture. *D. variabilis* is a proved transmitting agent and is known to be present in the area. It would seem justifiable, irrespective of the results of the survey, to suspect that either or both types of ticks were the transmitting agents among the soldiers involved.

Presumably the infected tick bites its host and feeds for an undetermined period before transmission of the disease occurs. The infectious agent can penetrate the unbroken skin, however, and it is theoretically possible that simple contact of the ticks or the accidental crushing of the tick could cause transmission of the infection. This might explain the method by which the



Fig. 5 (case 7).—Regional axillary lymphadenopathy in a case of tularemia.

disease was produced in patients not giving a definite history of a tick bite.

The number of civilians exposed to tick bites and the degree of their exposures are usually considerably less than encountered in a military problem such as described in this presentation. Therefore tick borne tularemia is of relatively less importance in the civilian population than in the military service. The problem of prophylaxis against tick borne tularemia is important to the Army particularly and should be approached in a manner similar to that prescribed by the Army for prevention of Rocky Mountain spotted fever. It is suggested that tick infested areas be avoided. Failing this, one should remove ticks from one's clothing and body at least once daily. When soldiers are bivouacked in a tick infested region a thorough inspection of the entire body should be made. Soldiers may be paired

off and each assist in the thorough inspection of the other's body for the presence of ticks. Ticks should be removed by tweezers or with cotton saturated with iodine. The tick should not be crushed with the bare fingers. The site of the tick bite should be painted with iodine and the hands washed thoroughly after the removal of ticks. One cannot rely on one's sensorium to determine when ticks are attached, as there is frequently an insignificant degree of pain and irritation.

During the forty-five days following the period covered by our report, there occurred 11 additional cases of tularemia.¹⁷ The number of cases may seem relatively small as compared with the number of hospitalizations due to all other causes combined. However, each case of tularemia requires, as a minimum, approximately six to seven weeks of hospitalization and convalescence. The number of days lost due to this disease is obviously great.

CONCLUSION

Fifteen cases of tick borne tularemia in soldiers from an Army maneuver area in Tennessee were seen between the dates of May 14 and June 12, 1943 and presented typical clinical findings of tularemia. The diagnosis was made by clinical picture on admission, a history of exposure to ticks in nearly all instances, a negative history of contact with rodents, a typical clinical course and positive blood agglutinations for *P. tularensis* in 14 of the 15 cases. General supportive treatment was given in all cases, no serologic preparations were used, and all patients recovered. One patient developed a lobar pneumonia and a pleural effusion regarded as specific. Nine cases were of the ulceroglandular type and 6 of the glandular type.

REPORT OF CASES

CASE 1.—A white man aged 23 entered the Evacuation Hospital on May 28, 1943 with a transfer diagnosis of cellulitis of the left scapular area and left axillary lymphadenopathy. He remembered removing a tick from the left shoulder, May 16. A day later he felt ill and had a chill followed by a temperature of 104 F. An ulcer developed on the left shoulder blade followed by tender left axillary lymph nodes. Physical examination revealed an ulcer over the left scapula and very large, tender left axillary lymph nodes. The chest was normal. His fever was septic in type, reaching 103 F. daily for eight days, after which it decreased to 100-101 F. On June 8, following a sudden turn in bed, he became dyspneic and coughed considerably, and his temperature rose to 104 F. Development of a tularemic pneumonia or enlarged hilar lymph nodes causing respiratory embarrassment was suspected. An x-ray of the chest revealed a pneumonia of the right lower lobe. A thoracentesis was performed at which 200 cc. of a dark, straw colored, clear fluid was obtained. A few leukocytes and some cellular debris were noted on microscopic examination. The patient was given continuous inhalation of oxygen. In addition, 10 cc. of a 1:1,000 aqueous solution of metaphen was given intravenously on June 12, 13 and 14. The patient gradually became less dyspneic, improved generally and made a slow but uneventful recovery. The blood agglutination for tularemia was positive in a dilution of 1:640 on June 7. The diagnosis was tularemia, ulceroglandular type, complicated by a lobar pneumonia and pleural effusion, probably specific in type.

CASE 2.—A white man aged 26 entered the Evacuation Hospital on May 14, 1943 with a transfer diagnosis of a severe cellulitis of the left leg, cause undetermined. History revealed that he had become ill about May 4 with influenza-like symptoms. Simultaneously he noted a small "pimple" on his left leg which, instead of "coming to a head," developed into a

14. Topping, N. H.: Personal communication to the authors.
15. Bayne Jones, Stanhope: Personal communication to the authors.
16. Parker, R. R.: Personal communication to the authors.

17. Williams, W. C.: Personal communication to the authors.

small ulcer and was accompanied by a painful swelling in the left subinguinal region. Fever was noted. Physical examination revealed the presence of enlarged, chronically infected tonsils, an ulcer 1 cm. in diameter on the medial aspect of the lower third of the left leg and an erythematous tender mass just below the left inguinal ligament, approximately 3 cm. in diameter. The temperature was 101 F. Examination was otherwise negative.

The leukocyte count on May 15 was 16,650. He was given 60 grains (4 Gm.) of sulfanilamide daily for four days. Blood agglutination for tularemia was positive in a dilution of 1:1,280 on June 1. His fever of 101-103 F. persisted for five days and dropped by lysis to near normal levels for several weeks. By June 7 the mass in his left groin had become fluctuant, and surgical incision was carried out with the evacuation of much pus. His convalescence was uneventful. The diagnosis was tularemia, ulceroglandular type.

CASE 3.—A white man aged 23 entered the Evacuation Hospital on May 28, 1943 with a transfer diagnosis of an ulcer of the left leg probably due to a tick bite. History revealed that on May 16 he had awakened suffering from severe malaise, fever of 105 F., swollen glands in the left groin and a feeling that "his bones would break." He had removed many ticks from his body during the days preceding admission to the hospital. On May 18 he noted a small ulcer on his left leg, which increased in size until one week prior to admission, when some improvement was noted. Physical examination revealed a temperature of 104 F., a punched out ulcer 1.5 cm. in diameter on the left leg and a large mass of lymph nodes in the left subinguinal region measuring 3 by 5 cm. in diameter, firm and indurated but with a fluctuant area in the center. The skin over the mass was red. Blood agglutination for tularemia was positive in a dilution of 1:320 on June 15. Convalescence was uneventful. The diagnosis was tularemia, ulceroglandular type.

CASE 4.—A white man aged 21 entered the Evacuation Hospital on June 7, 1943 with a transfer diagnosis of influenza. History revealed the onset of illness on June 2, when the patient awakened with a high fever and pronounced malaise. He was admitted to a hospital immediately. Two days later he noticed a small furuncle on the medial surface of his right leg and a large tender mass in his right groin. He knew of no tick bite. On admission to our hospital the temperature was 102.5 F. There was a small punched out ulcer 1 cm. in diameter in the midportion of the medial aspect of the right leg. In addition there was a large nonfluctuant mass 3 by 3 cm. in the right subinguinal region. Examination was otherwise negative. The leukocyte count was 8,400 and the urinalysis was normal. Blood agglutination for tularemia was positive in a dilution of 1:320 on June 15. Our period of observation of the patient was terminated abruptly after one week, at which time the patient was still febrile. The inguinal lymphadenopathy had increased in degree. A report to us on his progress indicated that the patient made an uneventful recovery. The diagnosis was tularemia, ulceroglandular type.

CASE 5.—A white man aged 22 entered the Evacuation Hospital on June 12, 1943 with a transfer diagnosis of an ulcer of the left flank secondary to a tick bite. History revealed that on June 8 he had found a tick on the lower left chest wall. Two days later he experienced a chill followed by fever, and a tender mass developed in the left axilla. Physical examination on admission was negative except for a punched out ulcer 2 by 3 cm. in diameter on the lower left chest wall and a pronounced left axillary lymphadenopathy, which was tender. He was afebrile during our observation. The blood agglutination was positive in a dilution of 1:1,280 on June 29. Our observation of the case was limited to five days, but subsequent reports indicated that convalescence was satisfactory and uneventful. The diagnosis was tularemia, ulceroglandular type.

CASE 6.—A white man aged 25 entered the Evacuation Hospital on May 28, 1943 with a transfer diagnosis of acute gastroenteritis. The history revealed that he had first reported ill with diarrhea, which started suddenly on May 24 and caused a fever of 106 F. He was treated with sulfaguanidine and bismuth subcarbonate and on May 28 was admitted to our hospital. On admission the chief complaints were fever and

general malaise; the diarrhea had ceased and the stools were formed. The positive physical findings included a small healing superficial abrasion on the left leg as well as one on the right leg. The latter appeared inflamed, was 3 by 5 cm. in diameter and was surrounded by small satellite pustules. There was a very large mass in the right subinguinal region interpreted as due to femoral lymphadenopathy. Urinalysis was negative. The leukocyte count was 8,150, with a normal differential. The lesion on the right leg underwent further necrosis, developing into a ragged ulcer. There was a drop in fever from 103 F. to normal followed by a secondary rise maintained for several days. The blood agglutination for tularemia was positive in a dilution of 1:640 on June 7. Recovery was satisfactory when the patient was last seen and it did not appear that the subinguinal mass would become fluctuant. The diagnosis was tularemia, ulceroglandular type.

CASE 7.—A white man aged 25 entered the Evacuation Hospital on May 28, 1943 with a transfer diagnosis of a possible tularemia. History revealed that he had had tick bites on his

Laboratory Data

Case No.	Tick Bite	Ulcer	Lymph Nodes *	Agglutination
1	Yes	Yes	3	June 2 1:80 June 7 1:640
2	No	Yes	4	June 1 1:1,280
3	Yes	Yes	3	June 1 Negative June 7 Negative June 15 1:320
4	No	Yes	3	June 15 1:320 June 30 1:2,560 (partial)
5	Yes	Yes	3	June 15 Negative June 29 1:1,280
6	No	Yes	4	June 1 Negative June 7 1:640
7	Yes	Yes	3	June 1 1:320
8	No	Yes	4	June 1 1:1,280
9	Yes	Yes	4	June 15 Negative Not repeated.
10	Yes	No	3	June 15 Negative June 7 1:1,280
11	Yes	No	4	June 7 1:320
12	Yes	No	4	June 1 Negative June 7 1:40 June 15 1:1,280
13	Yes	No	4	June 1 Negative June 7 1:640
14	Yes	No	1	June 15 Negative June 26 1:640
15	No	No	2	June 7 1:160 June 15 1:1,280

* Graded according to size, grade 1 representing the smallest and grade 4 the largest.

body and right forearm about May 19. Shortly thereafter he had a chill associated with a fever of 104 F., followed by pain under his right arm and a very severe headache. He was hospitalized for ten days at another hospital and released only to suffer a recurrence of his fever. On admission to our hospital the patient was subacutely ill, with a temperature of 101 F. There were two small punched out ulcers on his right forearm and a large tender nodule in the right axilla identified as an enlarged lymph node. Blood agglutination for tularemia was positive in a dilution of 1:320 on June 1. The nodule in the right axilla underwent gradual resolution and an uneventful recovery ensued. The diagnosis was tularemia, ulceroglandular type.

CASE 8.—A white man aged 25 entered the Evacuation Hospital on May 20, 1943 with a transfer diagnosis of an ulcer on the lower third of the right leg, the cause of which was undetermined. History revealed that a nonpainful ulcer had been present for one week, starting as a "rising" and later breaking down and discharging pus. There was no history of tick bites or contact with any rodents. Positive physical findings on admission included a single, painless, discrete, punched out ulcer 1 cm. in diameter on the lateral surface of his right

leg, 8 cm. above the ankle. No varicose veins were noted. The leukocyte count was 8,400 with a normal differential. Urinalysis was negative. On May 25 the patient developed a swelling 6 by 8 cm. in diameter in the right inguinal region, about which there was considerable erythema. Fluctuation, questionable at first, became definite, and since it appeared that the abscess would rupture spontaneously surgical incision and evacuation of a large amount of pus was done on June 7. On June 1 blood agglutination for tularemia was positive in a dilution of 1:1,280. His fever never exceeded 99.6 F., and the patient made an uneventful recovery. The diagnosis was tularemia, ulceroglandular type.

CASE 9.—A white man aged 41 entered the Evacuation Hospital on June 10, 1943 with a transfer diagnosis of tick borne tularemia and an undiagnosed neurologic disturbance. The history of the latter is irrelevant. History revealed that several ticks were removed from his right ankle about May 31 and that on June 5 he suddenly developed a high fever and malaise. Physical findings on admission relative to his tick borne disease included a temperature of 101.4 F., a moderate degree of dehydration, an ulcer over the right patella, two ulcers on the posterior surface of the right leg 3 inches below the popliteal space and a small tender mass in the right inguinal region. The leukocyte count was 12,000 and the urinalysis was negative. During his hospital stay the temperature varied between 99 and 102 F. Blood agglutination was negative for tularemia on June 15. He was transferred to another hospital, where a diagnosis of tularemia was accepted clinically but not proved by repeating the agglutination test at a time when it would have been expected to be positive. Subsequent reports indicate that the patient made an uneventful recovery. The impression was tularemia, ulceroglandular type.

CASE 10.—A white man aged 31 entered the Evacuation Hospital on June 11, 1943 with a transfer diagnosis of possible Rocky Mountain spotted fever. History revealed that his initial complaints included general malaise, headaches, backaches, chills and fever. Later, enlarged painful lymph nodes occurred in the right inguinal region. He had removed many ticks from his body. On admission to the hospital he complained of headache and pain in his abdomen, back and right groin. The patient was febrile, with a temperature of 102.5 F.; he appeared acutely ill and moderately dehydrated. There were many "red areas" on his ankles and feet, indicating recent "insect bites." He had no rash about his forearms, wrists, face, hands or soles. An exquisitely tender mass was present in the right inguinal region. There was pronounced nuchal rigidity and a positive Kernig's sign. The leukocyte count was 8,000 with a normal differential. The spinal fluid examination was normal. A diagnosis was made of tularemia with meningismus. He was given 1,000 cc. of 5 per cent glucose in isotonic solution of sodium chloride intravenously and his fever subsided within four days. Blood agglutination for tularemia was positive in a dilution of 1:1,280 on June 28. Subsequent reports from another hospital indicated an uneventful recovery. The diagnosis was tularemia, glandular type.

CASE 11.—A white man aged 32 entered the Evacuation Hospital on June 4, 1943 with a transfer diagnosis of a left axillary lymphadenitis probably secondary to a tick bite. History revealed that he had found and partially removed a tick from his left axilla on May 15. The head apparently remained buried despite attempts made at the aid station to remove it. Ten days later he developed a mass in the left axilla 2 by 5 cm. in diameter and projecting 2 cm. above the surface. On admission the patient was ambulatory and afebrile and did not appear acutely ill. There was no ulcer nor evidence of a recently healed ulcer. The leukocyte count and urinalysis were normal. By June 7 the mass in the left axilla had become fluctuant and was incised. Blood agglutination for tularemia was positive in a dilution of 1:320 on June 7. No fever exceeding 99.6 F. was recorded and the patient made an uneventful recovery. The diagnosis was tularemia, glandular type.

CASE 12.—A white man aged 25 entered the Evacuation Hospital on May 29, 1943 with a transfer diagnosis of tick bites on both lower extremities and the lower trunk. History

revealed that the patient had noticed a tick in his left groin on May 8. He removed the tick, but the head remained buried in the skin and subsequent infection about it necessitated surgical incision on May 14. At this time several small "kernels" were noticed in his left groin, which gradually increased in size. On May 26 the patient had a chill followed by a temperature of 103 F. He was admitted to a hospital, given sulfadiazine for two days and then transferred to our hospital. Examination on admission revealed a temperature of 100.4 F., and several tick bites on the extremities and abdomen, one on the left flank being infected. The inguinal glands, particularly on the left, were enlarged and tender. The leukocyte count was 12,300. The patient received sulfadiazine for four days without apparent improvement. His fever subsided gradually to near normal levels after eight days and then rose to 101 F. for several days before subsiding. The blood agglutination for tularemia was positive in a dilution of 1:1,280 on June 15. Convalescence was uneventful. The diagnosis was tularemia, glandular type.

CASE 13.—A white man aged 28 entered the Evacuation Hospital on May 28, 1943 with a transfer diagnosis of nasopharyngitis and acute lymphadenitis of the left inguinal region, the cause of which was undetermined. History revealed that about May 14 the patient had removed several ticks from his legs. On May 23 he was admitted to a hospital because of a sudden onset of pronounced malaise, chills and fever. Several days later he noticed a painful swelling in his right groin, for which he was transferred to our hospital. Physical examination revealed a temperature of 102.6 F., scattered musical rales in his chest, a tender swollen mass in his right inguinal region and two circumscribed indurated areas about 1 cm. in diameter on his left thigh. No ulcer was present. The leukocyte count was 11,000. His temperature decreased from 102.6 F. to normal in four days, remained normal for three days and rose again to remain moderately elevated for the next two weeks. Blood agglutination was positive for tularemia in a dilution of 1:640 on June 7. The patient made an uneventful convalescence. The diagnosis was tularemia, glandular type.

CASE 14.—A white man aged 27 entered the Evacuation Hospital on June 11, 1943 with a transfer diagnosis of fever of undetermined origin. His complaints included fever, headache, pain and swelling in both groins and some diarrhea. The history revealed that these complaints had been present for two days and that he had removed several ticks from his body during the past month, the most recent one being removed two days prior to admission. Positive physical findings included a temperature of 100.6 F., insect bites on his chest, abdomen and legs, and an indurated area in the right groin attributed to a tick bite. There was no ulcer, but the lymph nodes in both groins were enlarged, discrete and tender. On June 26 the blood agglutination for tularemia was positive in a dilution of 1:640. The patient's temperature remained elevated during the period of our observation, but subsequent reports indicated that he made an uneventful recovery. The diagnosis was tularemia, glandular type.

CASE 15.—A white man aged 28 entered the Evacuation Hospital on May 28, 1943 with a transfer diagnosis of nasopharyngitis. History revealed that the patient had been in a region heavily infested with ticks and had removed several from his lower abdomen and thighs. On May 26 he became ill with malaise, chilly sensations and slight pain in the right inguinal region. Physical examination on admission revealed that the patient was febrile and appeared moderately ill. The inguinal nodes were bilaterally enlarged, discrete and slightly tender. On the left side of the abdomen and on the anterior aspect of the upper third of the thigh were found small crusted lesions attributed to tick bites. The leukocyte count was 7,100. The patient's temperature became normal on the third hospital day and remained so until the eleventh hospital day, when the temperature rose to 100.6 F. The temperature remained elevated for two days, after which it again returned to normal and remained normal until discharge from the hospital. No ulcer was seen at any time. Blood agglutination for tularemia was positive in a dilution of 1:1,280 on June 15. The patient made an uneventful recovery. The diagnosis was tularemia, glandular type.

NONMAGNETIC INTRAOCULAR
FOREIGN BODIES

HARVEY E. THORPE, M.D.

PITTSBURGH

The greatly increased number of intraocular foreign body cases resulting from the accelerated industrial war effort and the nature of ocular combat injuries makes this subject of special interest to the ophthalmologist today.

With the acceleration of industry has come the employment of huge numbers of unskilled, inexperienced personnel and a relative laxness in protective and preventive measures (goggles, shields, and so on).

There has also been an increase of such cases in civilian life with wider use and misuse of poor quality tools, especially hammers, chisels, hatchets and improvised hand tools. We have seen this in patients coming from the farm and home.

Moreover, the number of nonmagnetic foreign body cases has increased both in industry and in combat. Industry is now making greater use of various nonferrous metals and nonmagnetic alloys. The recognition by German and Italian forces in the early days of the North African desert campaigns that steel land mines and booby traps were readily discovered with magnetic locators resulted in the substitution of copper, other nonferrous metals and even bakelite in their construction, according to Stallard.¹ The resulting explosions of these mines and of other bombs in combat and aerial warfare have caused many new problems for the ophthalmic surgeon.

Whereas the magnet was the miracle tool for the magnetic intraocular foreign body, it was worthless for high manganese steel alloys, for copper, brass, lead, aluminum, wood and other substances. (Frequently the ophthalmologist threw his hands up at seeing a case with nonmagnetic intraocular foreign body. However, with improved x-ray localization and improved surgical technics a number of such eyes can be saved from blindness.)

A number of problems face the ophthalmologist in every case of ocular injury by solid bodies:

1. What should lead one to suspect an intraocular foreign body?
2. What are the external clinical evidences of such?
3. Should x-ray photographs be taken?
4. What is a rapid and simple method of x-ray localization?
5. Are there methods aside from the history to tell one whether one is dealing with a magnetic or a nonmagnetic particle?
6. Should the magnet be used for diagnosis?
7. How should one proceed with nonmagnetic foreign bodies in an attempt to save the globe?
8. What foreign bodies may remain undisturbed?
9. What are useful measures for prevention of infection?
10. What are essential safety measures during operation?
11. What steps can one take to prevent retinal detachment incident to transscleral surgery?
12. What about sympathetic ophthalmia?

I shall attempt to answer some of the foregoing and other related questions that deal with nonmagnetic intraocular foreign bodies. It does not necessarily follow that an eye containing a piece of copper or brass is doomed and should be treated by enucleation. Measures and technics are available which will save many of these cases, and every resource must be used, especially when both eyes harbor foreign bodies or when only one seeing globe remains.

It is also my purpose in this paper to review the various procedures that I have found useful in removing over seventy nonmagnetic foreign bodies from the cornea, anterior chamber, iris, lens, ciliary body, sclera and vitreous.

HISTORY

To begin with, a detailed history of injury is extremely important. Any eye that was injured while the patient was hammering, drilling or working with moving machinery or was exposed to flying particles from another workman's tools, to an explosion or to the shattering of any solid (glass, wood or metal or the like) should be considered as possibly harboring an intraocular foreign body. A careful description and examination (where possible) of the tools and objects that were employed at the time of injury helps in differentiating magnetic from nonmagnetic fragments. Stallard,¹ writing about the North African desert campaign, found that the analysis of exploded bomb fragments lodged in the face gives a clue as to the nature of the possible intraocular foreign body. We may thus often have a clue as to whether a foreign body is magnetic or nonmagnetic or whether it is glass or some other substance. At times it is possible to discover in questioning the patient the approximate size of the offending particle and the course it took toward the eye, coming from below or above or from the right or left.

The removal of foreign material from the conjunctival sac or corneal surface should by no means lull our senses into dismissing such a case without further careful investigation. Too often does one see instances in which a so-called corneal foreign body was removed or nothing was found and the patient dismissed, only to turn up later with siderosis, cataract or blindness.

The Clinical Examination.—The visual acuity of both eyes should be recorded when possible. A careful examination of the entire anterior segment for evidence of perforation is paramount. This must be done with both loupe and slit lamp microscope. (A drop of pontocaine facilitates this.) A perforation of Bowman's and especially Descemet's membrane leaves permanent tell-tale evidence. A small bloody blotch on the sclera shortly after injury may be the only evidence of perforation. A further careful search with the ophthalmoscope gives valuable information about the iris, lens, vitreous and retina. With the instruments mentioned one can often follow the trajectory and course of the flying particle in the eye and thus help to localize it. One should remember, however, that occasionally flying particles may recoil from the sclera into an unsuspected part of the vitreous chamber.

The examinations also reveal degenerative and chemical pigmentation changes such as siderosis or chalkosis.

A knowledge of the tension in early injuries gives information about the presence of a leaking wound. It is of course easier to recognize and diagnose cases shortly after injury. This is particularly true in small

Read before the Section on Ophthalmology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

1. Stallard, H. B.: War Surgery of the Eye: Removal of Magnetic Intraocular Foreign Bodies by the Posterior Route. *Brit. M. J.* 3: 629 (Nov. 28) 1942.

scleral perforations, which may heal within a few days and defy recognition.

The transilluminator is valuable in discovering iris holes and even holes in the ciliary body and choroid.

Both eyes must be carefully examined. It has happened thrice in my experience that a patient coming in with an injury of one eye harbored a foreign body in the other. All methods of examination should be employed.

X-RAY LOCALIZATION

In any case in which there is the possibility of an intraocular foreign body being harbored x-ray examination should be made first for diagnosis and then for localization. And every case in which there is a history of hammering, shattering or explosion should be so suspected, even when clinical examination is negative. When the diagnostic x-ray is negative when taken posteriorly to anteriorly in the chin-nose position it should be repeated with several different exposures so as to give films of different densities and angles. Small foreign bodies sometimes show up in this manner. Of course only x-ray opaque substances, such as metals, show up. Glass, wood and plastics do not show up in x-ray films of the eye. An extremely valuable procedure for foreign bodies in the anterior segment is Vogt's² "skeleton free or bone free" method for soft tissue technic. A dental film or a small special shaped film is held along the side of the nose and pressed into the inner canthus. The lids are drawn apart and a profile x-ray film of the exposed globe is taken from the temporal side. The film can also be pressed into the lower fornix and the eye rayed from above. This method shows up minute foreign bodies in the anterior chamber angle or anywhere in the anterior segment. It will even show glass if taken with soft rays. More of the anterior half of the eyeball can be exposed by producing artificial proptosis with 2 to 4 cc. of procaine hydrochloride or isotonic solution of sodium chloride injected retrobulbar. Comberg's³ contact lens method of x-ray localization has deservedly gained in popularity in recent years. It is simple and accurate if performed with reasonable care. Its chief proponent in this country has been Pfeiffer.⁴ A drop of tetracaine hydrochloride 0.5 per cent is instilled in the conjunctival sac. The contact lens bearing four lead markers is inserted between the lids and two exposures are taken, viz. a lateral exposure with the involved eye nearest the film and a posteroanterior exposure with the head in the chin-nose position. For the posteroanterior view the patient looks into a small pocket mirror on the x-ray table at the reflection of either his injured or his healthy eye. If the eyes are not parallel or only one eye is present, a cover glass on a black cardboard triangle wedge base serves as an angle mirror in which can be seen an adjustable reflected light source, such as a pocket flashlight. The purpose, of course, is to have the visual axis perpendicular to the film and the central x-ray passing through the visual axis. The chief objection to the Comberg lens is that it does not always lie coaxially with the cornea; another is its fragility when dropped. In the past three years I have frequently used a plastic⁵ localizing shell, similar to the Comberg

lens. To obviate displacement of the lens on the globe, I recently modified the Comberg lens by having suture holes drilled near the lens edge, so that it may be anchored with episcleral sutures. A vent hole was also placed in the corneal portion near the limbus to help break suction adherence, which occasionally impedes removal of the contact lens. The plastic lens is useful if one is interested in localization only. The glass lens, however, has certain advantages for visualization of the globe. It outlines the anterior portion of the globe and when studied in stereoscopic⁶ lateral and posteroanterior views gives one an excellent idea as to the topographic location of the ocular foreign body. It has given me a better tridimensional concept. On reading a draft of Spaeth's⁶ paper before this section two years ago, I was impressed with the value of stereoscopic x-ray pictures of the eye when air had been injected into Tenon's space according to the method of Gasteiger and Grauer abroad and Spackman⁷ of Philadelphia. This air injection method we combined with the Comberg glass lens.⁵ The entire globe was thus outlined when viewed stereoscopically, and borderline cases of double perforation became more readily diagnosed.

X-ray localization must be extremely accurate, for it controls the method of approach and the site of the globe incision in these cases. The Comberg and Vogt methods are simple, rapid and accurate. They can be performed with a minimum of apparatus. Brigadier Graham's x-ray localization method⁸ with a 12 mm. diameter silver wire ring sutured to the limbus has proved valuable in the handling of eye injuries in the African desert campaign. Spaeth⁶ uses silver rings of several diameters sutured to the globe for x-ray localization. Sweet's localizer is an accurate method requiring special apparatus.

An eye may harbor two or more foreign bodies. This happens occasionally in civilian life and more frequently in combat injuries, and sometimes this complicates localization. Stokes mentions that in 300 cases of intraocular foreign bodies the x-ray examination was negative in 2.5 per cent of cases. It is possible that Vogt's method or variation of exposure technic might show up some of these negative cases (which evidently harbored minute or flat foreign bodies lying parallel with the horizontal plane of the eye). The methods used formerly for differentiating nonmagnetic from magnetic foreign bodies aside from the history and examination of tools and analysis of fragments taken from the face¹ or other parts of the body in explosion injuries consisted of the magnet test. This is a dangerous method because the magnet during the test may pull the foreign body into the ciliary or lens or may wedge it deeper. The magnet should never be used as a test except when the x-ray localization is completed and the method of approach is decided on, and then only in the operating room when one is ready to proceed with surgery.

THE BERMAN LOCATOR

We have in the past six months used a Berman locator.⁹ This is an extremely valuable instrument, first, for determining whether an intraocular foreign

2. Wieser, S.: Skeleton Free X-Ray of the Anterior Segment by Professor Vogt's Method. *Klin. Monatsbl. f. Augenheilk.* 81: 234 (Aug. 31) 1928.
in Berens, C.: *The Eye and Its Diseases*, Philadelphia, W. B. Saunders Company, 1936, pp. 936-938.
3. Comberg, W.: A New Method for X-Ray Localization in the Eyeball. *Arch. f. Ophth.* 118: 175, 1927.
4. Pfeiffer, R. L., in discussion on Spaeth,⁶ p. 55.
5. Thorpe, H. E., in discussion on Spaeth,⁶ p. 56.

6. Spaeth, E. B.: Removal of Metallic Foreign Bodies from the Eyeball and the Orbit. *Tr. Sect. Ophth., A. M. A.* 1942, p. 38.
7. Spackman, E. W.: X-Ray Diagnosis of Double Perforation of the Eyeball After Injection of Air into the Space of Tenon. *Am. J. Ophth.* 15: 1007 (Nov.) 1932.
8. Stallard, J. p. 630.
9. Berman Locator—Instructions published by Waugh Laboratories, 420 Lexington Avenue, New York, makers of the locator.

body is magnetic and, second, for localizing the magnetic foreign body. It was used originally at Pearl Harbor by Moorhead¹⁰ in December 1941. Minsky¹¹ recently described its application for the transscleral approach. I have found it valuable for localization in 4 magnetic cases and found its usefulness in differentiating a non-magnetic vitreous foreign body. It has not proved useful in localizing small nonmagnetic foreign bodies. My interest was attracted to it by having seen it used at the New York Eye and Ear Infirmary in the fall of 1943.

Glass and other chemically inert foreign bodies, such as aluminum and stainless steel alloys, apparently do not irritate the eye. And when they are in relatively inaccessible positions or when they do not produce mechanical irritation or pressure they are best left alone.

Copper and its alloys and most iron particles are extremely dangerous to the eye. It is well to follow the generally accepted dictum ably expressed by Snell¹² to employ every reasonable attempt to remove a non-magnetic foreign body, if the surgery does not cause excessive mutilation of the eye. It is well to see these cases early, to do all necessary examinations immediately and then to decide whether surgery or expectant conservative treatment had best be followed for the time being. Where an attempt at removal of multiple intra-ocular foreign bodies would mutilate the globe, discretion would prove the better part of valor.

PREPARATION OF PATIENT FOR SURGERY

A barbituric sedative, such as $1\frac{1}{2}$ grains (0.1 Gm.) of pentobarbital, is given one hour before operation, if it is to be done under local anesthesia. The skin is cleansed in the usual manner.

The local anesthesia and akinesia is performed as follows:

1. Topical instillation of 3 drops of 0.5 per cent tetracaine, or pontocaine, hydrochloride at intervals of one minute.
2. Subconjunctival injection of 2 per cent procaine hydrochloride containing 1/30,000 epinephrine. It is often valuable to inject the superior rectus.
3. Retrobulbar injection of 1 cc. of 2 per cent procaine with 1/30,000 epinephrine between the lateral and the inferior recti.
4. Akinesia by (a) O'Brien's method: injection 10 mm. in front of the ear notch (incisura intertragica), 3 to 4 cc. of 2 per cent procaine with 1/75,000 epinephrine (1 minim of 1/1,000 epinephrine in 5 cc. of procaine); (b) VanLint's method; injection of aforementioned procaine and epinephrine mixture at the lateral border of the orbit.
5. Lateral canthus injection of 0.25 cc. of procaine-epinephrine mixture to facilitate canthotomy if necessary.

For general anesthesia, sodium pentothal intravenously or solution of tribromoethanol with ether proves adequate.

Retrobulbar injection and akinesia may be omitted when the globe is not to be opened.

CORNEA

The method of removal of foreign bodies from the cornea depends on their depth, which is determined with the narrow beam of the slit lamp. An angled spud working at the edge of the embedded corneal foreign body so as to pry it out is a relatively simple procedure. Where there are multiple foreign bodies the 1 millimeter curet is extremely useful in their removal.

When a sliver of brass or wood lies between the corneal lamellas it can be extracted with a splinter forceps having special teeth. I have found this useful in the past ten years (fig. 2). Sometimes it becomes necessary to cut down through the overlying lamellas and to pry the splinter loose. It is very important to remove wood splinters or thorns thoroughly, as they cause prolonged irritation. Multiple small fragments of coal or glass completely enclosed in corneal stroma are well tolerated and may remain undisturbed.

Fragments in the pupil zone of the cornea that have penetrated partly into the anterior chamber are best handled by following Kuhnt's suggestion. The pupil is contracted with physostigmine. A narrow keratome such as Agnew's or Castroviejo's is inserted into the anterior chamber across the pupil zone and anchored in the opposite side to prevent injuring the lens capsule. One then cuts down with a knife needle until the foreign body is reached (fig. 3). It is then removed with the aforementioned corneal splinter forceps. Penetrating fragments outside the pupillary zone are reached by performing a corneal section with a Graefe knife or keratome and scissors. The corneal flap is turned inside out and the projecting splinter is removed with the aforementioned forceps (fig. 4). The corneal incision is closed with previously inserted corneoscleral sutures. A conjunctival flap may be prepared previous to performing the corneal section.

ANTERIOR CHAMBER

Nonmagnetic foreign bodies lying loose in the anterior chamber can be removed through a keratome incision in the particular quadrant where the foreign body lies. The anterior chamber should always be restored with the chamber irrigator (isotonic solution of sodium chloride). If the corneal incision is near the limbus, a corneoscleral suture should be used to prevent iris prolapse. The Mendoza type of suture or a mattress suture may be employed. The Burch corneal pic and the Hoffman pic are useful in suturing corneal lacerations. Atraumatic needles are very helpful.

CHAMBER ANGLE

Most foreign bodies in the anterior chamber lodge in the lower angle, and sometimes they are wedged there and covered by exudate. They can be seen with the diagnostic chamber angle contact lens if they lie behind the scleral ledge. To remove them, keratotomy is made to the side and the foreign body is pried loose with a blunt Tyrell iris hook (fig. 5a). After which it is removed with the serrated nontoothed iris or clot forceps. Lancaster has suggested making a corneal section forward with a narrow Graefe knife and then reaching into the angle with the clot forceps (fig. 5b). Meller suggested the application of a corneoscleral trephine over the foreign body and hinging the button (fig. 5c). After the foreign body is removed with forceps, the corneoscleral button can be replaced with a suture.

IRIS

Nonmagnetic foreign bodies embedded in iris tissue should be disentangled with forceps through a keratome incision. If this is impossible, or when the iris is traumatized excessively, the portion of iris containing the foreign body should be excised.

LENS

Foreign bodies in the lens cause traumatic cataract. Sometimes this is slow in developing. However, because of the low metabolic lens activity, lenticular foreign

10. Moorhead, J. J.: A Foreign Body Finder: The Locator, J. A. M. A. 121: 123 (Jan. 9) 1943.

11. Minsky, H. H.: Transscleral Removal of Intraocular Foreign Body with the Aid of the Berman Locator, Arch. Ophth. 31: 207 (March) 1944.

12. Snell, A. C.: Industrial Eye Injuries from Foreign Bodies, in Kuhnt, H.: Industrial Ophthalmology, St. Louis, C. V. Mosby Company, 1924, p. 147.

bodies are well tolerated. To remove such fragments one might employ Donovan's¹³ method, described before this section in 1925. A gage 19 hypodermic needle is inserted into the lens through a small keratome incision up to the foreign body, and suction made with the attached syringe plunger. On the other hand, the usual practice is to wait until the lens becomes opaque and deliver it in capsule. Older patients may have the

the upper equatorial portion of the lens with counter pressure below according to the method of Pagenstecher (fig. 6). A small amount of vitreous loss may take place at times. But this is guarded against by previously inserted corneoscleral sutures.

If the foreign body lies near the anterior capsule and one is timid about the intracapsular extraction, it is good practice to grasp the nonmagnetic particle and its overlying capsule with the toothed capsule forceps. If the foreign body is lost in the depths of the lens, it may be located with the transilluminator applied to the sclera. (The pupil should be maximally dilated.)

FOREIGN BODY IN POSTERIOR AQUEOUS CHAMBER

Accurate localization is essential. A Gayet incision is made with Lundsgaard's knife. This can be done externally or subconjunctivally with a previously dissected flap. The McLean corneoscleral suture is inserted. Iridodialysis at the root is performed with pointed scissors and the iris is pulled out of the way with the blunt Tyrell hook. The corneal flap is lifted up. The foreign body is grasped with the serrated blades of the clot forceps. It is sometimes seen enveloped in exudate.

NONMAGNETIC PARTICLE IN CILIARY BODY

Here again accurate x-ray localization is paramount. A conjunctival flap including Tenon's capsule is dissected from 10 mm. behind the limbus forward. The sclera is exposed and the exact spot for incision marked with gentian violet. A meridional incision with a number 15 Bard Parker blade is made in the sclera overlying the foreign body. This is facilitated by inserting a Merdoza suture after the first few strokes and having the assistant pull up on both sides of the loop. This helps to pull the sclera away from the ciliary body. Burch's method for making a scleral incision may be used by having parallel episcleral sutures, one on each side of the incision and drawing up on them. The incision is made carefully and deliberately. It is made 4 to 5 mm. long and may be enlarged with Stevens scissors. If one now pulls up on the scleral sutures so as to open the incision, the foreign body may appear in the wound (fig. 7). For hemostasis it is now useful to place a drop of thromboplastin and a drop of 1:100 solution of epinephrine between the lips of the incision. One waits a few moments for the foreign body to appear. If the foreign body lies deeper in the ciliary body, that can now be incised radially. If the particle is seen it can be seized with serrated dressing forceps. Aid may be had from the Lancaster or Lange

transilluminator applied to the opposite side of the globe. If the ciliary body prolapses, it is abscised. The incision is closed with the aforementioned Merdoza suture. The conjunctiva is replaced and closed with running silk sutures. I have employed both methods

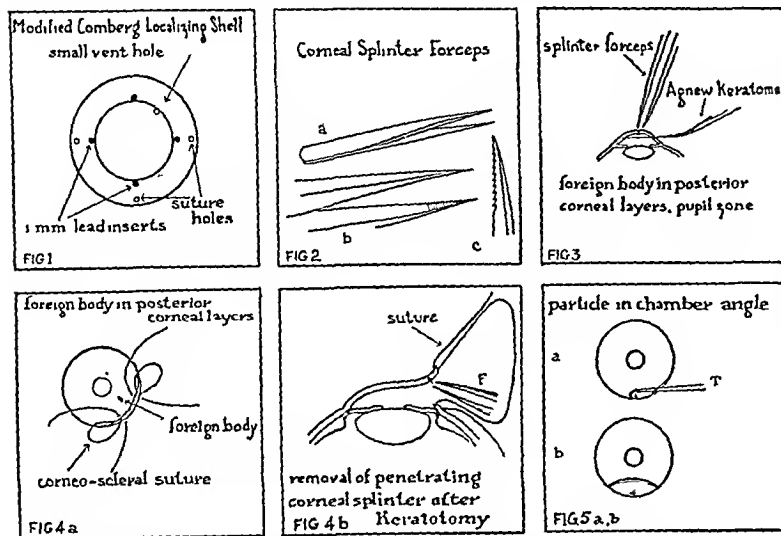


Fig. 1.—Modified Comberg localizing shell made of glass or plastic material. Three suture holes permit anchoring to episclera. Fig. 2.—Author's corneal splinter forceps: a, general appearance of forceps; b, larger view showing sharp points and direction of serrations; c, lateral view illustrating serrations pointing backward. These toothlike serrations allow a good grasp. Fig. 3.—Kubnt's method of perforating corneal splinter in pupil zone amplified by use of corneal splinter forceps. Fig. 4—*a*, limbal incision and sutures for peripherally located penetrating corneal foreign body; *b*, second step, removal of splinter from everted cornea with forceps *F* through a keratotomy. Fig. 5—*a*, use of Tyrell hook through a keratotomy to dislodge a particle wedged in the chamber angle; *b*, Lancaster's method performing keratotomy forward, so that a forceps can reach into the chamber angle.

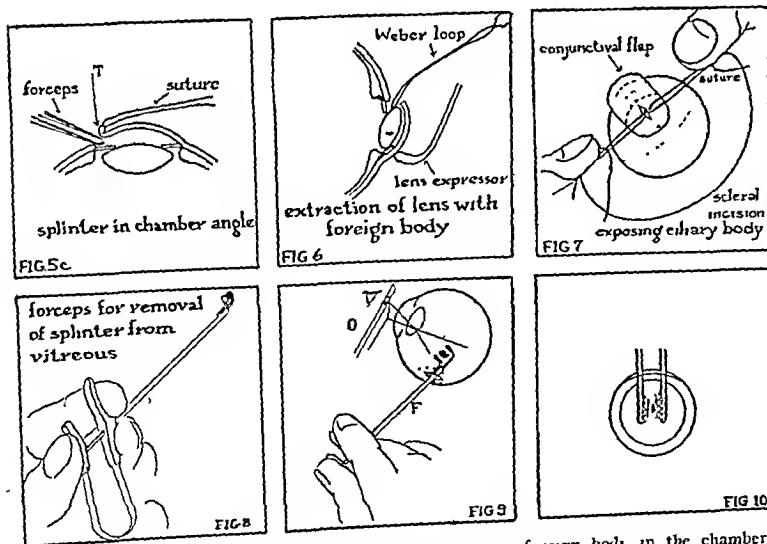


Fig. 5c.—Meller's method for reaching a nonmagnetic foreign body in the chamber angle with aid of hinged trephine button. *T*, Fig. 6.—Intracapsular extraction of lens containing foreign body, using Weber's wire loop and pressure from without. Fig. 7.—Method of exposing ciliary body with Merdoza suture to remove particle located in ciliary. Fig. 8.—Vitreous self closing foreign body forceps. Fig. 9.—Method of removal of nonmagnetic foreign body from vitreous under ophthalmoscope control, showing scleral incision and barrage. Fig. 10.—Toothed capsule forceps used to grasp piece of capsule incision and barrage.

lens extraction with capsule forceps and pressure from without. In younger patients with a tough zonule it is safer to use the Weber loop or a flat lens spoon at

13. Donovan, J. A.: Foreign Bodies in Lens: A New Method of Removal, *Tr. Sect. Ophth., A. M. A.*, 1924, p. 106.

successfully on several occasions. In passing, one should mention the pars plana approach according to Verhoeff's¹⁴ and Fralick's¹⁵ methods for magnetic particles.

FOREIGN BODY IN VITREOUS

An eye with a piece of copper or brass in the vitreous was formerly given up as lost. Today instruments and methods are available for salvaging many such eyes. Several methods are applicable, depending on the location of the foreign body and on its visibility with the ophthalmoscope. The prognosis is affected materially by its location. Foreign bodies close to the optic nerve offer a poorer prognosis.

VITREOUS: FIRST METHOD

When the lens is clear and the foreign body is visible with the ophthalmoscope without excessive rotation of the globe it can be approached through a meridional transscleral incision and grasped with the author's¹⁶ self-closing vitreous forceps (figs. 8 and 9). This forceps is constructed so that it has no moving blades in the incision and thus does a minimum of trauma to the neighboring retina and choroid.

The conjunctiva and Tenon's capsule are dissected from the globe after the quadrant of location of the foreign body is selected. The point of election for scleral incision is marked with gentian violet. A rectangular area 8 by 4 mm. is now outlined, with scleral surface coagulations (fig. 10) to prevent retinal detachment. An I or T shaped incision is made with the long axis meridionally in the sclera by gradual dissection with a number 15 Bard Parker blade. An episcleral suture on each side of the incision pulls the sides of the incision up. The choroid and retina are opened with the diathermy knife. The incision can, however, be made with a shallow thrust of the Graefe knife. The length of the incision need not be more than 4 to 6 mm., depending on the size of the foreign body. Sometimes it appears in the wound as glistening metal or covered by exudate. In such a case it is grasped with small

moscope and grasps it with the author's self-closing vitreous chamber forceps introduced through the incision. The foreign body is removed and the incision closed as described. The wound may be touched with trichloroacetic acid or 95 per cent phenol¹⁷ (or with the fused potassium hydroxide pencil and neutralized with 3 per cent acetic acid). The conjunctiva is closed with a running suture.

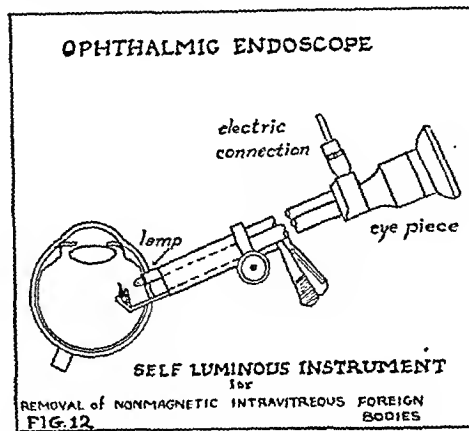


Fig. 12.—Ophthalmic endoscope; self-luminous instrument for removal of nonmagnetic intravitreal foreign bodies.

VITREOUS: SECOND METHOD WITH OPHTHALMIC ENDOSCOPE¹⁸

I devised this instrument in 1934, first in the non-luminous form, and presented it before this section¹⁹ in the same year. Shortly thereafter I designed a self-luminous endoscope for removal of intravitreal nonmagnetic foreign bodies. This later model was demonstrated at the October 1934 meeting of the American Academy of Ophthalmology and Oto-Laryngology. I have used it successfully in 4 cases. It has also been used with success clinically by Spaeth⁶ and others.

The ophthalmic endoscope consists of (1) a light carrier with a very small miniature lamp, (2) a special inverted Galilean telescope 2.5 mm. in diameter and (3) a small tubular forceps held together in a straight line by a metal sheath. In cross section the working end of the instrument measures 2.5 by 6.5 mm. The telescope affords a field of view 60 degrees in diameter, so that at 15 mm. distance the field is 15 mm. in diameter, at 20 mm. distance the field is 20 mm. in diameter, and so on. Thus, two thirds of the interior of the eye can readily be covered by moderate tilting of the instrument. Objects at a distance of 15 mm. from the telescope objective lens are magnified 2 diameters. The magnification increases with proximity to the telescope. The lens system is so constructed that objects in the field of view are in focus at all distances from 1 to 25 mm. Thus all instrumentation can be observed directly.

Various forceps are supplied with the instrument. Some have serrated jaws with smooth edges for grasping irregular shaped splinters, others have small cup shaped jaws or ring shaped jaws for lead BB shot. The adjustable sheath may be preset for the desired depth of forceps penetration into the globe.

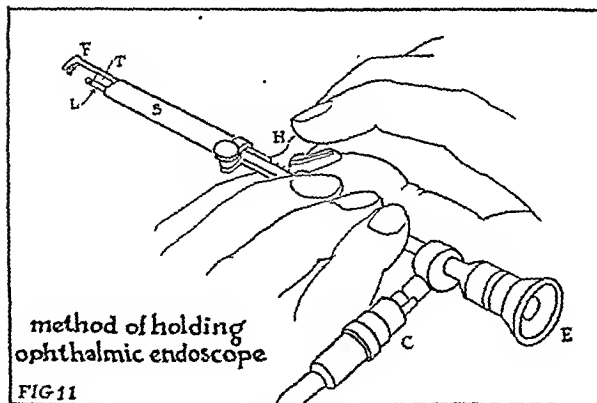


Fig. 11.—Method of holding ophthalmic endoscope during operation: F, forceps blades; H, forceps operating hand; T, telescope; L, miniature lamp; S, adjustable sheath; E, eyepiece; C, electric connection to battery rheostat.

forceps and the scleral incision immediately closed with the aforementioned sutures. If it does not appear in the wound, one visualizes the particle with the ophthal-

14. Verhoeff, F. H.: Concerning Magnetic Intraocular Foreign Bodies and Their Removal, *Am. J. Ophth.* 15: 689 (Aug.) 1932.
15. Barbour, F. A., and Fralick, F. B.: The Posterior Approach for the Removal of Magnetic Intraocular Foreign Bodies, *Am. J. Ophth.* 24: 553 (May) 1941.
16. Thorpe, H. E.: A New Forceps for Removal of Lead Shot from the Vitreous, *Arch. Ophth.* 15: 308 (Feb.) 1936.

17. Stieren, E.: Magnet Extraction from the Vitreous, *Am. J. Ophth.* 15: 1121 (Dec.) 1932.

18. Thorpe, H. E.: Ocular Endoscope: An Instrument for the Removal of Intravitreal Nonmagnetic Foreign Bodies, *Tr. Am. Acad. Ophth.* 39: 422, 1934.

19. Thorpe, H. E.: Ocular Endoscope, *Tr. Sect. Ophth., A. M. A., 1934*, p. 290.

PRELIMINARY PRACTICE WITH THE ENDOSCOPE

The most important factor in the application of the endoscope is to become thoroughly familiar with its use by working inside a small light proof pill box 1 inch in diameter, approximate in size to the eye. Since the instrument is monocular, that is a handicap one learns to overcome during practice. Then one should practice with pig's eyes into which a foreign body such as a lead shot has been inserted through a scleral incision. The same incision may be used for the endoscope. The lamp is connected by a cord to a preset battery or rheostat. The ophthalmic endoscope is cleansed with green soap and water. It is rinsed in distilled water and sterilized by immersing the instrument and the connecting cord in 1:1,000 mercuric oxycyanide or 1:3,500 mercuric phenyl nitrate for twenty minutes. After rinsing in distilled water and wiping dry, it is ready for use. Heat sterilization, alcohol and other sterilizing chemicals (except the ones advised) will damage the lens cement and the electrical insulation and thus ruin the instrument.

When used in the operating room, the instrument is applicable to most cases in which the vitreous is not too bloody or muddy with exudate. X-ray localization by either Sweet's or Comberg's method is performed first. The sclera is exposed in the quadrant of localization preferably between two muscles or beneath the inferior or superior rectus (never beneath the lateral or medial recti because of the long ciliary arteries). A rectangular area 4 by 8 mm. with its long axis meridional is plotted on the surface of the sclera in the quadrant of attack. The sides of this rectangle are now outlined with scleral surface coagulations 2 mm. apart. These are made either with the 1 mm. diameter flat surface electrode or with the short Kronfeld diathermy needle electrode. A meridional I shaped scleral incision 2 by 7 mm. is now prepared with a number 15 Bard Parker scalpel, cutting down just to the choroid. Two Mendoza sutures are placed in the lips of the scleral incision. With these sutures the assistant can either pull the flaps of the incision open or he can shut them. Epinephrine 1:100 and thromboplastin are now dropped onto the choroid to produce a bloodless field. After a few moments the field is sponged dry. The choroid and retina are now incised the full length and shape of the scleral opening with the cutting current or with a small Graefe knife, using a shallow thrust. One now waits a few moments for the foreign body to appear in the wound. (It sometimes does, while the lips of the wound are held up with the aforementioned silk sutures.) The endoscope held in the left hand, with lamp lit, forceps controlled with right thumb and index finger, is now guided to the wound. The surgeon puts his eye to the eyepiece just as he places the working end of the instrument within the lips of the incision. He must be just within the retina or he cannot see the interior. The forceps must be kept closed and pulled up within 2 to 3 mm. of the telescope. The assistant prevents any deeper thrust of the body of the instrument while the surgeon inspects the interior of the globe in his search for the foreign body. As he is searching, he has the forceps blades turned slightly to one side. Once the foreign body is found, the surgeon gradually pushes the grasping forceps toward it, opens the forceps blades and allows the forceps to close slowly onto the foreign body. The forceps, with the foreign body retained by its self-closing spring action, is pulled up to the telescope under direct vision and the whole instrument

is now removed from between the lips of the wound. Little or no vitreous is lost if the telescope is not pushed into the vitreous body. During the entire procedure one assistant also keeps the scleral lips closed against the endoscope with the aid of the sutures mentioned. As soon as the foreign body is removed, the sutures are tied, closing the scleral incision. If necessary, additional sutures may now be inserted with the aid of the Burch pic or bident. The conjunctiva is closed by a running suture. The fundus may be inspected if the lens is clear to note the position and status of the retina. The postoperative treatment that I follow is the same as the one generally used for retinal detachment. After three to four weeks the patient is given Lindner Stenopaic spectacles. Of 4 patients operated on by this method, I has 20/30 vision, another has 20/100 vision, a third with originally bloody vitreous and a large ciliary wound has in the past five months come up to counting fingers and the fourth has a soft eye with no light perception.

Considerable interest has recently been shown in this method by military and naval medical officers as well as by ophthalmologists in civilian practice.²⁰

VITREOUS: THIRD METHOD

Scleral Incision and Transillumination.—This method was suggested in the presentation of the first (non-luminous) model of the ophthalmic endoscope in 1934.¹⁹

A scleral incision is prepared as is usual for the transscleral approach with addition of surface diathermy for prevention of retinal detachment, as described in the second method. One or two transilluminators are placed on the opposite walls of the globe, and as one inspects the open incision one may see the foreign body shadow. It is grasped with small dressing forceps. The sclera is closed with previously inserted sutures. This method has proved useful to me in 2 instances. Schutz²¹ has recently applied this method. Lindner²² recommended this approach.

In commenting in general on surgery of the vitreous, it is paramount not to grope in the vitreous blindly. It is highly important not to fish around in and generally lacerate the vitreous. The forceps should be small and simple acting and should approach the foreign body directly by the shortest and most feasible route. One must guard against damaging the retina and other vital structures. One must have a definite plan of approach and modus operandi, worked out on the basis of accurate localization. This is best done in form of a sketch or diagram.

VITREOUS: FOURTH METHOD

Biplane Fluoroscope and Cross²³ Forceps for Removal of Lead Shot.—I have had no personal experience with this method because of the lack of a biplane fluoroscope. In the hands of Cross, with the aid of his fluoroscopist, the method has proved successful in several cases.

SCLERAL FOREIGN BODIES

Generally if they do not penetrate into the globe, scleral foreign bodies may be allowed to remain undisturbed. However, should removal be necessary, an accurate localization with careful plotting comes first,

20. The manufacturer of the instrument is American Cystoscope Makers, Inc., 1241 Lafayette Avenue, Bronx, New York.

21. Schutz, J. A.: Removal of a Nonmagnetic Foreign Body from the Vitreous, *Am. J. Ophth.* 25: 70 (Jan.) 1942.

22. Lindner, Karl: Personal communication to the author, 1935.

23. Cross, G. H.: Removal of a No. 6 Lead Shot from Within the Eyeball by Specially Designed Forceps with the Aid of the Double Plane Fluoroscope, *Tr. Am. Ophth. Soc.* 25: 80, 1927.

followed by gradual cutting down on the indicated point in the sclera. If the foreign body is not visible on the surface, it is well to palpate the site of the projected incision with the end of a muscle hook to note the presence of a hard foreign body.

Orbital foreign bodies do not come within the scope of this paper. Most of them can remain undisturbed, unless large or making pressure on vital structures or causing pain.

The postoperative treatment is as follows:

1. *Foreign Protein Therapy.*—(a) In fresh injuries, on admission to the hospital 10 cc. of boiled milk is injected intragluteally for men, 8 cc. for women and appropriate lesser doses for children. Twenty million of typhoid antigen A intravenously may be substituted for the 10 cc. of milk dose and correspondingly for lesser doses. This may be repeated every third or fourth day for four to six doses. The typhoid antigen dosage is increased 20 to 40 to 60 million, and so on as required. (b) Older injuries receive the foreign protein therapy within six hours after intraocular surgery.

2. *Sulfonamides.*—Sulfadiazine is employed. In fresh injuries an initial dose of 2 Gm. is followed by 1 Gm. every four hours for twenty-four to forty-eight hours. Thereafter 1 Gm. is administered every six hours for two to three days. The dosage is figured 0.1 Gm. per kilogram of body weight. The blood cell count (red and white) and the urinalysis are performed every forty-eight hours during sulfonamide medication. The sulfadiazine blood level is also watched.

3. *Position in Bed.*—The patient is usually kept flat in bed for forty-eight hours for all wounds of the cornea. Scleral wounds or incisions require absolute rest for six to seven days. Incisions or wounds in the lower part of the globe require three to four days longer rest in the supine position.

4. Atropine is used (after checking tension) in all cases except foreign bodies in the anterior chamber or those projecting from the cornea into the anterior chamber. However, it is used routinely in all postoperative foreign body cases except when an existent primary glaucoma contraindicates its use.

5. Dressings every other day are routine except in traumatic cataract (or traumatic iritis), when they are done daily for mydriatic instillation.

6. Stenopaic Lindner spectacles are used for eight to sixteen weeks in all transscleral wounds posterior to the ora serrata.

SYMPATHETIC OPHTHALMIA

Every penetrating ocular injury should be watched for a year or longer for early evidences of sympathetic ophthalmia. This means careful slit lamp and ophthalmoscopic examination of both eyes at frequent and regular intervals. The use of foreign proteins, asepsis, the sulfonamide drugs and careful excision of prolapsed uveal tissue have caused a definite reduction in the occurrence of this dread disease. One must constantly be on the lookout for all the clinical evidences of this disease. Enucleation should not be delayed in the hope of saving a severely mutilated or hopelessly damaged globe when sympathetic ophthalmia is a likely probability. One should remember that the slit lamp gives reasonably early warning of developing sympathetic disease.

CONCLUSIONS

Chemically inert intraocular foreign bodies need not be disturbed unless they produce mechanical irritation. They sometimes cause glaucoma.

Differentiation of magnetic from nonmagnetic foreign bodies can be aided by the history of the injury, examination of the tools employed and use of the Berman locator as well as by examination of fragments from the face or other exposed parts of the body in explosion cases. The use of the magnet for diagnosis is bad practice and should be deprecated.

A simple x-ray technic is afforded by the Vogt and Comberg methods. A modified Comberg lens as described gives more certain localization and avoids pitfalls.

Stereoscopic x-ray films with localizing shell give a tridimensional concept of the foreign body position. When combined with air injection in Tenon's space, they help in diagnosing double perforations.

Multiple intraocular foreign bodies suggest conservative therapy for the time being when they exceed three in number.

One must avoid mutilating a globe simply for the sake of removing a foreign body that may be inert.

Retinal detachment must be properly and promptly treated.

Prompt removal of intraocular foreign bodies is important.

In using the ophthalmic endoscope, one must practice on numerous animal eyes to master the technic. Properly used, the endoscope is a valuable aid to our armamentarium for saving a potentially lost eye from a retained nonmagnetic foreign body.

One should never grope in the vitreous with any instrument.

Infections must be prevented and treated by asepsis, assurance of patency of the lacrimal passages, foreign proteins and sulfonamide drugs.

Foci of infection should not be overlooked in causing delayed healing and complications, such as uveitis.

The topical use of 1:100 epinephrine and thromboplastin helps to check oozing hemorrhage.

Removal of an injured eye is indicated only when it is collapsed or extensive loss of vitreous has taken place and light perception is gone.

Corneal and scleral lacerations heal earlier and better when sutured. The wound may also be covered by a conjunctival flap in addition to suturing.

One should remember to examine carefully the fellow eye at the first and subsequent visits: It may harbor a foreign body from the same or a previous accident. Both eyes should be watched routinely with slit lamp and ophthalmoscope.

Sympathetic ophthalmia should be kept in mind in every perforating case.

500 Penn Avenue.

ABSTRACT OF DISCUSSION

DR. E. B. SPAETH, Philadelphia: The accurate x-ray localization of a magnetic foreign body is relatively unimportant as long as we know (1) the size and the shape of the foreign body, (2) whether the foreign body is intraocular or extraocular and (3) perhaps whether it is anterior or posterior to the iris-ciliary body-lens diaphragm. A careful history of the situation and circumstances present at the time of the accident plus the x-ray intensity or density of the foreign body will probably clear up the question of whether or not the foreign body is a magnetic one. Conversely, the most accurate x-ray localization possible should be obtained for nonmagnetic foreign bodies. Even if one foreign body is fully visible with the ophthalmoscope, with the slit lamp or with oblique illumination one still does not know whether or not others, not visible, may be present. The fact to be emphasized is this: the use of any and all means available for localization, radiopaque markers, scleral rings, contact glasses, iodized oil and air injections, molded films and filtered x-rays, are all necessary though perhaps not in any 1 individual case. An eye which is hopelessly destroyed, sightless and collapsed should be removed as soon as possible. It shortens the period of hospitalization and permits an earlier return of the patient to social and economic activities. Sympathetic ophthalmia does not develop ordinarily

surgical or medical care because of persisting difficulties. All of the cases have been carefully followed for a period of two to fourteen years, and the present status of each one is well known by us.

The inclusion of a fairly large series of patients operated on elsewhere who later developed difficulties in our own personally supervised group of patients depresses the over-all picture. These cases are unsatisfactory not necessarily because of originally poor sur-

gical judgment or operative procedures but because of the difficulties inherent in the surgical management of ileitis and the tendency of the disease to recur post-operatively in new segments of small bowel or often in the colon. The inclusion of cases of high ileitis or of localized jejunitis, as well as cases of combined ileitis and colitis, still further complicates the statistical review of a large group of patients and dampens the enthusiasm which the simpler and more direct treatment of the original terminal forms of ileitis seemed to inspire. However, after an experience with 164 cases covering a period of fourteen years, we felt that it was important to review again our material as thoroughly as possible in order to appraise the late results of the surgical treatment of this disease.

the primary operation and the severe recurrence. A late recurrence has already been noted by Bockus¹ in a similar type of case in which nine years intervened before the lighting up of the original disease in a new segment of the small intestine. In this group the primary operative mortality rate is appreciable (16.3 per cent) but late follow-up studies show a distressingly high rate of recurrence.

Ileocolostomy Group.—An ileotransverse colostomy or ileosigmoidostomy with transection of the ileum was carried out in 65 cases with no operative death. Nine recurrences of the disease must be recognized, a recurrence rate of 13.8 per cent. Here the mortality rate of the operation is nil, but again a fairly high recurrence rate is evident although the figure is considerably less (13.8 per cent) than that following primary resection (19.5 per cent). A short-circuiting procedure without transection of the ileum was not performed in this series because it was recognized early that transection of the ileum well above the lesion is essential to a satisfactory result.

Two Stage Ileocolic Resection.—This graded type of operation consists of a primary short-circuiting ileocolostomy above the lesion with transection of the ileum followed after a period of time by resection of the original area of disease in the terminal ileum and cecum and ascending colon. There were 25 patients

TABLE 1.—Total Series, 164 Cases

	Number	Deaths		Recurrences	
		Num-ber	Per Cent	Num-ber	Per Cent
Ileocolostomy with exclusion...	65	0	0	9	13.8
One stage resection.....	55	9	16.3	0	19.5
Two stage resection.....	25	3	12.0	8	36.3
Combined ileocolitis.....	19	2	10.5	3	17.6

gical judgment or operative procedures but because of the difficulties inherent in the surgical management of ileitis and the tendency of the disease to recur post-operatively in new segments of small bowel or often in the colon. The inclusion of cases of high ileitis or of localized jejunitis, as well as cases of combined ileitis and colitis, still further complicates the statistical review of a large group of patients and dampens the enthusiasm which the simpler and more direct treatment of the original terminal forms of ileitis seemed to inspire. However, after an experience with 164 cases covering a period of fourteen years, we felt that it was important to review again our material as thoroughly as possible in order to appraise the late results of the surgical treatment of this disease.

ANALYSIS OF RESULTS

Primary Resection.—A primary resection of the disease process, usually of the pathologic terminal ileum and the adjacent normal ileum and ascending colon, was performed in 55 cases. Nine patients died post-operatively. Of the remaining 46, 9 developed recurrences in the ileum above the point of anastomosis (ileotransverse colostomy or ileosigmoidostomy), a recurrence rate of 19.5 per cent. Some of these recurrences have not been severe, and except for diarrhea and some loss of weight the patients have been treated

TABLE 2.—Mount Sinai Hospital Series, 137 Cases

	Number	Deaths		Recurrences	
		Num-ber	Per Cent	Num-ber	Per Cent
Ileocolostomy with exclusion...	57	0	0	6	10.5
One stage resection.....	45	6	13.3	6	15.4
Two stage resection.....	16	2	12.5	4	28.6
Combined ileocolitis.....	19	2	10.5	3	17.6

medically in a fairly satisfactory manner. The fact that we have encountered no late mortality in this group indicates that, once the risk of immediate operation has been overcome, life itself is assured, although physiologic intestinal function and general weight, strength and efficiency may be impaired.

The larger incidence of recurrence not hitherto recognized is due in large part to the longer period of follow-up. In this group we note a case of recurrence eight years after the original observation and another instance of recurrence twelve years after the first surgical procedure. In both instances, eight and twelve years of perfect health and function intervened between

TABLE 3.—Outside Series, 27 Cases

	Number	Deaths		Recurrences	
		Num-ber	Per Cent	Num-ber	Per Cent
Ileocolostomy with exclusion...	8	0	0	3	47
One stage resection.....	10	3	30	3	41
Two stage resection.....	9	1	11	4	59

in this group, with 3 postoperative deaths, a mortality of 12 per cent. We note 8 instances of recurrent disease in the surviving 22 patients, a rate of 36.3 per cent. The second of these two stage procedures was often necessitated by the lack of success of the first or short-circuiting operation. The operative risk was therefore greater and the likelihood of recurrence similarly enhanced in spite of the second more radical procedure. In the combined cases of ileocolitis in which the ileum and some segment of the colon, usually ileum and cecum or ileum and ascending and transverse colon, are involved the magnitude of the surgical procedure or procedures is greater, the risk is increased and the results are more dubious. Nineteen cases of combined ileocolitis are included in this group. There were 2 operative deaths and 3 instances of recurrence of the disease. Finally we include in this series 2 cases of multiple resections of the ileum for concomitant disease in two widely isolated segments of the small bowel. One patient is well and 1 developed a recurrence.

If we analyze separately the cases treated at Mount Sinai Hospital and those at other institutions, a disparity of figures becomes evident. This may be explained in part by the larger number of cases in 1 instance as compared with the other. Thus, in the Mount Sinai Hospital series there were 45 cases of ileocolic resection with 6 deaths, or 13.3 per cent, and 6 recurrences, 15.4 per cent. There were 57 patients in the ileocolostomy group with no operative mortality and

1. Bockus, H. L.: *Gastro-Enterology*, Philadelphia, W. B. Saunders Company, 1944, vol. 2, p. 192.

6 recurrences, a rate of 10.5 per cent. In the two stage resection group there were 16 cases with 2 deaths, a mortality of 12.5 per cent, and 4 recurrences, or 28.6 per cent. In the group of combined ileocolitis there were 19 patients with 2 deaths, a mortality of 10.5 per cent, and 3 recurrences, or 17.6 per cent. In the group treated at other hospitals 10 resection cases were followed by 3 deaths, a mortality of 30 per cent, and 3 recurrences, or 43 per cent. There were no deaths in the group of 8 ileocolostomy cases, but 3 recurrences, 47 per cent. In a group of 9 two stage resections there was 1 death, or 11 per cent, and 4 recurrences, or 50 per cent.

GENERAL OBSERVATIONS

Operative Mortality.—In the entire group of 164 cases, regardless of the complexity of the procedures involved, there were 14 deaths, an operative mortality of 8.5 per cent. The low operative risk for intra-abdominal procedures of such magnitude bespeaks the successful advances in surgical judgment, technic, anesthesia and preoperative and postoperative care.

The Choice of Operation.—We have collected enough material to permit an evaluation of the relative merits of primary resection as compared with short-circuiting procedures. We note 55 primary resections with 9 operative deaths and a recurrence rate of 19.5 per cent. In comparison, we have 65 short-circuiting procedures with no operative death and a recurrence rate of 13.8 per cent. The greater safety of the less radical procedure and its smaller rate of recurrence would weigh the balance strongly in favor of the more conservative operation.

Is it correct to term an ileotransverse colostomy or an ileosigmoidostomy with transection of the ileum a "palliative procedure"? "Palliative" would indicate an incomplete or a temporary measure, short of permanent cure. Such a term as applied to a short-circuiting procedure for the relief of regional ileitis is a misnomer, for in the course of the 25 instances in which a two stage resection was undertaken the specimen, when finally removed after a variable interval, showed in almost every case complete healing. In the interval between the two operations, abdominal inflammatory masses rapidly dissolve, abdominal wall fistulas heal and enterovesical communications close spontaneously. The resected specimens show advanced healing, scar replacement, a shrinkage of the lumen of the intestine and cessation of evidences of inflammation.

Why, then, was the second stage or resection undertaken? Either because the two stage procedure had been planned and adopted as the operation of choice and was carried through as per schedule because, in the judgment of the surgeon, conditions warranted the completion of the assignment, or persistent diarrhea or some localized discomfort or pain or delay in the restoration of full weight and strength seemed to indicate the removal of an area which might be a residual focus of disease. Also, because of the not infrequent recurrence above the anastomosis, it was originally thought that the secondary removal of the original source of infection would reduce the incidence of recurrences.

The two stage operation has been generally discarded for three reasons: (1) because in most instances the resected area of ileitis was found inactive and healed and fistulas spontaneously closed, (2) because in spite of the second stage resection the percentage of recurrence remained as high as if not higher than following

the simple short-circuiting procedure and (3) because in the group of the 25 cases of two stage resections we noted 3 deaths, an appreciable mortality.

In the earlier years of the surgery of ileitis, resection was preferred because, without the pathologic examination of the resected specimen, the actual diagnosis of the lesion could not be established beyond a reasonable doubt. The suspicion of intestinal tuberculosis was always suggested, and only the histologic and bacteriologic confirmation or denial would suffice to establish the nonspecificity of the lesion. With growing experience and confidence, the surgeon was able to identify and recognize ileitis as such and could with confidence short-circuit the lesion and return the diseased bowel to the abdomen without invoking criticism and without entailing the additional risk of a more radical procedure.

The Question of Recurrence.—It is difficult to explain satisfactorily the relatively high rate of recurrence proximal to the new anastomosis. Two possibilities immediately suggest themselves: Either the surgeon is unable to recognize the most proximal of the skip lesions before transecting the ileum or the recurrent focus starts from a nidus of infection outside the intestinal wall proper. With increasing experience the surgeon should be able to demonstrate all skip areas, knowing that these are characteristic features of the disease. This demands, in every case, a careful examination at the operating table of the entire small intestine. It is possible, however, that some skip areas may be so small as to escape the attention of the most experienced and alert technician. If this is the explanation, then a much wider area of small intestine must be excluded in order to circumvent any inclusion of disease above the anastomosis, a decision which might invite serious diarrhea and nutritional disturbances because of too much exclusion of mucosal absorbing surface. It has been suggested that the recurrences are due to residual infection outside the intestinal wall, the main suspicion being directed to the mesenteric lymph nodes. The fact that the recurrence rate is just as high, if not higher, after radical resection with excision of the mesenteric lymph nodes would seem to imply that these lymph nodes are not responsible for the recurrences. Furthermore, if the lymph nodes in the mesentery were the source of recurrent areas it would be necessary to hypothecate spread against the lymphatic flow, a most unusual event in the pathologic sequence of inflammation in man. It must be emphasized further that secondary operation, on many occasions, has disclosed complete recession of previously enlarged nodes after a simple ileocolostomy.

The Clinical Significance of Recurrences.—The diagnosis of recurrence is suggested by the presence of diarrhea, fever and loss of weight and is confirmed by radiographic demonstration of irregularity in the segment of ileum proximal to the new anastomosis. This is best demonstrated by the barium enema. In many of these so-called recurrences the basis for such a diagnosis is the roentgenographic demonstration of a distorted mucosal pattern or irregularity of outline of the "new" terminal segment of ileum. In many of these fever is absent, diarrhea is moderate, weight is maintained and the hemoglobin content of the blood is unaffected and the patient functions as an efficient member of society. Many of these so-called recurrences are "radiographic" recurrences only and the diarrhea is not more excessive than is consistent with the increased number of movements that characterize any shortened intestinal tract. These patients do well with general

supportive measures, such as diet, rest, liver extract and vitamin B injections, and they often improve with succinylsulfathiazole or sulfathaladine as chemotherapeutic agents. A large number of patients suffering with mild recurrences of the radiographic type have been under observation for some years and remain comparatively well. One wonders whether, in the absence of active symptoms, the x-ray is the final criterion for making a diagnosis of recurrence. However, in appraising the cases reported in this paper we have classed every one presenting x-ray evidences of ileal distortion characteristic of the disease as a recurrence. Cures by surgery in ileitis are often so complete that we have records of 3 patients who have been admitted to the armed forces of the country and are serving in perfect health.

No satisfactory medical treatment of ileitis exists. Chemotherapy has not been proved to be generally satisfactory in this disease; penicillin has not been released in sufficient quantity for a fair trial, although there is little scientific reason to believe that penicillin will be curative.

Until the cause of the disease is discovered, the treatment of ileitis remains surgical. The future improvement in the results of the operative treatment of ileitis will rest on earlier diagnosis and more prompt operative intervention. With earlier diagnosis on the part of the physician and with greater experience on the part of the surgeon, especially as regards the choice of operative procedure, the future should hold promise of far better results.

50 East Seventy-Seventh Street—1075 Park Avenue.

ABSTRACT OF DISCUSSION

DR. HENRY W. CAVE, New York: Of the primary resections in 55 cases there were nine deaths. Of the 46 that did survive 9 developed recurrences, a recurrence rate of 19.5 per cent. Although these recurrences have taken place, some were not too severe and were treated by medical management. This is a high rate of recurrence following primary resection. As always, the longer the period of follow-up, the larger number of recurrences are discovered. There were 2 late recurrences, 1 eight years, the other twelve; both of these patients maintained perfect health and function between the time of primary operation and the time of recurrence. In the ileocolostomy group (which they now advocate) they had 65 patients. In this group of 65 patients there was no mortality, a commendable surgical achievement. They report a smaller group of 25 cases in which a two stage ileocolic resection was done. In the 22 that survived there was a surprisingly high recurrence rate of 36.3 per cent. The second stage procedure was performed frequently for the reason that the short circuiting maneuver previously had failed to cure the patient. Nineteen patients in this group were suffering from a combined lesion, "ileocolitis"; in other words, the ileum and the ascending or transverse colon were diseased. Considering the severity of this particular lesion, they were fortunate in having only two operative deaths. For the entire group of 164 patients there were fourteen deaths, an admirably low operative mortality of 8.5 per cent. They attribute this low mortality rate to advances in surgical judgment, anesthesia and preoperative and postoperative care. I think it was due to their wide experience with this disease and their own sound judgment in handling each difficulty. They admittedly cannot explain the high recurrence rate proximal to the anastomosis. They suggest that it is due to the fact that the surgeon does not discover involved areas higher up before transecting the ileum or perhaps that the point of recurrence is outside the intestinal tract and is not demonstrable. From the impressive number of cases and the figures shown of low mortality and low rate of recurrence, one would agree that in their hands, at least, the operation of choice is ileocolostomy with exclusion.

DR. CLAUDE F. DIXON, Rochester, Minn.: I agree that the results in some cases of nonspecific enteritis in which there is recurrence are discouraging. Recurrence is not invariably due to a diseased segment of bowel being overlooked at the time of resection but to the fact that often the disease develops in a heretofore normal segment of bowel. I believe that infection is not primarily the cause. Over a two years period my colleagues and I attempted to isolate a causative organism but to no avail. The same holds true with regard to a virus as a possible factor. In attempting to find a substance to which patients suffering from nonspecific enteritis are sensitive or allergic I have observed that many of them are sensitive to whole milk. Could this be the cause? Resection of the diseased segment of bowel is the procedure of choice. The exclusion type of ileocolostomy in my experience has not brought about complete recovery. It does in some instances produce an apparent abatement of the disease in the short circuited segment of intestine followed by general improvement of the patient's condition, but, on the other hand, I have had some patients who returned with an extension of the disease. When a fistula occurs, for example between the diseased segment of intestine and the urinary bladder, ileocolostomy in many of my cases has not brought about spontaneous closure of the communication between the bladder and the intestine. I have had the same experience with several cases in which an enteroabdominal fistula was present; therefore I still perform resection. In 3 of my cases there were so-called recurrences four to eight years after resection. Nonspecific enteritis usually occurs among high strung, nervous persons not unlike that group of patients among whom duodenal ulcer frequently develops. During the past six years my colleagues and I have performed resection (most often a one stage procedure) in 108 cases of nonspecific enteritis with only two deaths.

DR. BURRILL B. CROHN, New York: Most of the mortality in resection was the result of poor judgment. Resection in the presence of multiple fistulas and localized peritonitis, resection performed in the presence of well defined abscesses are likely to head one for disaster. In the course of time short circuiting surgery was introduced. At first I was disappointed with the fact that short circuiting was performed and the disease process was allowed to remain. In those earlier years I advocated and urged secondary resection. Now, with the review of this series of cases, I am convinced that the less surgery the better, the safer for the patient. Short circuiting alone, leaving aside the original disease, is probably the best procedure. I should like to go on record against the pessimistic figures in the literature. These data are published by men who accumulate hundreds of figures by reading various articles, lumping them all together and attempting to draw conclusions. The follow-up is here entirely insufficient and the statistics are therefore not likely to be reliable. We lack experience with penicillin; we think well of the sulfonamide drugs; I am still an enthusiastic supporter of the surgical approach to the disease. The future carries a greater promise of more satisfactory results because most of the cases of ileitis, as we see them today, have had courses ranging from two to ten or even twenty years before surgery was approached. If, in the future, the diagnosis can be made without the lapse of such an interminable time, and if the surgical approach is direct and takes place soon enough in the life history of the disease, I think the end results of surgery will be gratifying.

First Cesarean Section.—The first cesarean section on record was performed by an Italian physician, Christopher Bain, in 1540. Jeremias Trautmann of Wittenberg, Germany, first described the technic of the operation in detail. His patient died three weeks after the operation. James Gullenean (1550-1609) performed the operation in the presence of Ambroise Paré (1510-1590) in the year 1590 (?). His patient died during the operation. The famous surgeon Paré advised against the operation. Strange as it may seem, the first successful operation for cesarean section was performed in 1500 by Jacob Nuffer, a layman, on his own wife.—Gordon, Benjamin Lee: *The Romance of Medicine*, Philadelphia, F. A. Davis Company, 1944.

ARMY CONTRIBUTIONS TO POSTWAR VENEREAL DISEASE CONTROL PLANNING

LIEUTENANT COLONEL THOMAS H. STERNBERG
AND

CAPTAIN GRANVILLE W. LARIMORE
MEDICAL CORPS, ARMY OF THE UNITED STATES

It is even now apparent that the approaching demobilization period will be accompanied by many serious problems in the control of the venereal diseases. During and following previous wars the incidence of venereal disease always reached epidemic proportions. While the maintenance of low military rates during the first three years of the current conflict justifies a feeling of achievement by all concerned, it is noteworthy that since the 1st of January 1944 the Army venereal disease rate for the continental United States has risen steadily to a present level of 36 per thousand men annually as compared to the 1943 rate of 26.3. Furthermore, it is our belief, based on the following considerations, that the Army rate in the continental United States will continue to rise for some time and may even reach World War I levels:

1. It is increasingly evident that a general letdown in the overall venereal disease control program, both military and civilian, is in progress.

2. The outstanding advances in therapeutic methods clinaxed by the introduction of penicillin have resulted in (a) better reporting of venereal disease with a decrease in the amount of concealed gonorrhea, (b) a definite but as yet unmeasured effect on the will of the soldier to avoid venereal disease and (c) a reduction in the man days lost per thousand men annually from 1,280 in 1940 to a current record low of less than 300, giving rise to a further loss of interest in prevention.

3. As the result of overseas assignment, the group of young trained venereal disease control officers initially stationed in this country has been depleted almost to the vanishing point. While this has lowered the intensity of our venereal disease program at home, it is with a great deal of satisfaction that the downward trend of the venereal disease rates in all theaters of operation is recorded. The combined overseas rate for all American soldiers is now lower than for those stationed in the United States.

4. Troops returning from overseas areas have had an abnormally high venereal disease rate of infection, acquired after arrival in this country. This is an increasingly serious problem. It can be explained in part by the effects of long overseas duty and by the belief of these men that the girls in this country are free of infection.

It is obvious that these problems affect the civilian and military alike and present a rather gloomy picture for the immediate future. Despite this, it is our opinion that in the postwar period there will exist an unprecedented opportunity to reduce the incidence of the venereal diseases to a manageable minimum. This opportunity, to be fully exploited, will require a critical evaluation of our current control measures with a view toward their strengthening and expansion and a recognition of the changing aspects of venereal disease control brought about by more effective therapeutic weapons and by the

mass wartime experience with educational and case finding procedures.

It is believed that in the planning for postwar venereal disease control the Army has much to offer in the way of material assets and experiences. It is our intention in this paper to discuss specifically these contributions not only with respect to actual demobilization procedures but also in relation to the strictly civilian activities of venereal disease education, case finding and community action.

DEMobilIZATION PLANS

During the past six months the Army, in collaboration with the U. S. Public Health Service, has developed demobilization plans in respect to venereal disease which may be outlined as follows:

1. A physical examination for venereal disease and a routine serologic test for syphilis will be performed on all soldiers within the forty-eight hours prior to their discharge from the Army.

2. All soldiers with gonorrhea and chancroid, and those with evidence of active syphilis, either early or late, will be held and treated. They will be treated until cured or, in the case of syphilis, they will receive a course of penicillin which is believed to be curative but which in any event will render the patient noninfectious.

3. Referral will be made to appropriate state health departments through the U. S. Public Health Service of (a) the name and civilian address of previously untreated soldiers found at the time of separation to have latent syphilis as evidenced by a positive serologic test and (b) all pertinent information on soldiers under treatment or previously treated by the Army, provided further medical attention is considered necessary.

The application of this plan to over seven million soldiers will be of considerable value to the overall civilian program in that it represents (1) a mass case finding procedure, (2) a uniform method of transition of partially treated or incompletely observed cases from the Army to the civilian, (3) a mechanism for detecting the previously unidentified failures to the prescribed course of treatment and (4) a method of obtaining a final evaluation of Army treatment schedules, both mapharsen-bismuth and penicillin.

In such a mass procedure some errors are bound to occur. Some of the positive tests will on investigation prove to be technical or biologic false positives, and it is important that these individuals shall not be considered syphilitic until proved so by subsequent examination. Further, it is inevitable that an occasional case of infectious syphilis or gonorrhea will escape identification during the final physical examination or will be in the incubation period at that time.

MEASUREMENT OF TRENDS

Unfortunately, our present methods of measuring incidence of infectious venereal disease in civilian populations, based on reported cases, are subject to so many errors that they are difficult to evaluate. On the other hand, the incidence rates for venereal disease in the Army reflect to a considerable degree the incidence of infectious venereal disease in the civilian community and may therefore be used in determining trends in the civilian population.

While the total Army venereal disease rate in the continental United States has risen sharply since the 1st of January, 1944, a breakdown by disease reveals the increase to be entirely due to gonorrhea. The epidemiologic picture in this disease is far from encouraging. The recent 40 per cent increase in the Army gonorrhea rate must reflect, at least partially, an increase in the

Read before the National Postwar Venereal Disease Control Conference, St. Louis, Nov. 9, 1944.

From the Venereal Disease Control Division, Preventive Medicine Service, Office of the Surgeon General, U. S. Army.

incidence of civilian gonorrhea. Since military data invariably show a ratio of 6 to 7 cases of gonorrhea to 1 of syphilis, it may be assumed that a similar ratio prevails in the civilian population. If this assumption is true, it suggests that an enormous amount of unrecorded and presumably untreated gonorrhea exists in the civilian population and indicates the relative inadequacy of our present gonorrhea control program.

However, during the past year the Army syphilis rate has declined 20 per cent. It is hoped and believed that this decline is due to a lowering of the civilian reservoir of infectious syphilis brought about through the admittedly better case finding technics in this disease, plus the effect of the rapid treatment programs.

POSTWAR PERSONNEL RESOURCES

These figures on the disproportionate decline in syphilis and increase in gonorrhea present encouraging evidence of success in the syphilis control program which should serve as a stimulation to even greater efforts toward the elimination of this disease. They also, of course, indicate the great need for the development of an effective gonorrhea control program. The accomplishment of these objectives will to a large extent depend on the availability and proper utilization of trained or experienced personnel, and the Army will contribute greatly to this task.

Availability of Experienced Physicians During Demobilization.—During the war several thousand medical officers have received formal training or experience in the control of venereal disease and in general public health procedures. The majority of these officers were general practitioners in civilian life and will return to their offices when released. They should be encouraged to continue their interest in and support of venereal disease control as an aspect of preventive medicine. The role of the private practitioner in the control of the venereal diseases has been underemphasized. It is vital to the success of the overall program that a better relationship between the health officer and the physician be established to the end that every physician is either his own adequate epidemiologist or permits access to his patients of an accredited health department representative.

Utilization of Army Lay Venereal Disease Control Officers.—A second contribution the Army will make to civilian postwar personnel resources will be several thousand enlisted men who have had extensive training and experience in the nontechnical aspects of venereal disease control procedures. Many of these have devoted most of their Army service to taking contact histories and have become very proficient in this task; others, both white and colored, have acted as noncommissioned venereal disease control officers with considerable distinction; more than a thousand are graduates of formal courses in venereal disease control for noncommissioned officers, given at several Army posts during the past three years. The value of male nonmedical contact follow-up personnel has been demonstrated in several state health departments as well as in the Army, and it is believed that health departments and clinics should consider the employment of these individuals as they are demobilized.

INFLUENCE OF TREATMENT ON CASE FINDING

An important factor that has had a definite influence on case finding in the Army has been the introduction of penicillin in the treatment of gonorrhea. When

penicillin was first made available to the Army for the treatment of this disease, many soldiers with successfully concealed infections voluntarily reported at sick call and asked for penicillin treatment. This experience would seem to have considerable significance to civilian case finding programs, indicating that at the proper time widespread publicity in respect to the availability of penicillin and its nontoxicity and effectiveness will result in many hidden sources of infection voluntarily seeking treatment.

POSTWAR COMMUNITY ACTION

During the past few years community organization and action toward the control of the venereal diseases, stimulated and assisted by the military, federal and voluntary agencies, has reached a peak of popular support and interest which will be difficult to maintain. As the end of the war approaches it is becoming increasingly evident that the danger of a serious letdown in these activities is imminent. Since in the postwar period Army support of community action will no longer have either the influence or authority as during the wartime period, it is believed urgent that all agencies and local groups concerned immediately direct their planning toward peacetime activities, justified on the basis of a permanent community need, rather than as a temporary aid to the Army in time of war.

Influence of Army Personnel in Postwar Community Programs.—In the Army, commanding officers of all grades are charged with the responsibility of maintaining health in their organizations, and by regulation they are, with the advice and assistance of the surgeon, specifically delegated the task of development and maintenance of venereal disease and preventive medicine control programs. The so-called command aspect of public health practice carries down through the noncommissioned officer to the enlisted man, and the subject is included in all training courses. Thus demobilization will return to the communities hundreds of thousands of officers and millions of enlisted men who have had first hand knowledge of the principles of preventive medicine. Many of these men are the civic leaders of tomorrow, and every effort should be exerted to assure their active participation and support in all phases of community action directed toward the control of venereal disease.

VENEREAL DISEASE EDUCATION

During the past few years the Army has enjoyed a unique experience in being able to apply, on a compulsory basis, intensive venereal disease educational procedures to large masses of men. This program, beginning at the time of the soldier's induction and carrying through to his discharge, is carried out by commanding officers, medical officers and chaplains, utilizing every accepted method of approach.

It is significant in terms of the overall civilian educational program that the Army alone will have returned to civilian communities by the end of demobilization over 9,000,000 men who have been subjected to this instruction, a circumstance which will, we hope, raise the general venereal disease educational level of the nation to a new high. With these men as a nucleus, an opportunity exists to remove forever the venereal diseases from the realm of the unmentionable.

Because of current publicity and conflicts over education as a venereal disease preventive measure it seems desirable that the Army mass experience in this phase of venereal disease control be made available. The

amount and variety of venereal disease education to which the average soldier is exposed is certainly larger and more concentrated in point of time than is currently applied to the civilian population. Further, it has been possible through observations of individual organizations to formulate opinions as to the value of various educational materials and methods of presentation. Some of these are here offered as being of possible significance in the planning of future civilian venereal disease educational programs.

First, it must be recognized that there are two distinct and separate phases of venereal disease education, (1) the imparting to the individual of adequate technical knowledge of the venereal diseases and their prevention and (2) the motivation of the individual with the will to avoid either illicit sexual intercourse or unprotected sexual exposure. Much of the confusion as to the actual role of education, and no small part of the criticism that has been leveled against it as a venereal disease preventive measure, arises from a failure to consider these two aspects as separate entities.

It must be admitted that an individual cannot intelligently protect himself against venereal disease if he does not know what the diseases are, how they are spread and the correct methods of prevention, including continence. Yet it must also be accepted that the possession of merely technical knowledge is no assurance that it will be used when needed. We have seen not one but literally thousands of examples demonstrating that possession of mere technical knowledge of the venereal diseases is of limited value as a preventive measure and that, to be effective, venereal disease educational procedures must also impart a motivation for the avoidance of venereal disease. This motivation involves complex and in many instances intangible factors, which in the Army are related to such diverse conditions as the religious and educational background of the soldier, the influence of the home and the community, the attitude of his commanding officer, the *esprit de corps* of his unit, fear of the diseases or their treatment, fear of shame or ridicule and many others, over most of which the Army has little direct control.

The Army, through the Corps of Chaplains and through venereal disease educational material, has continuously stressed continence as the most desirable and satisfactory method of avoiding venereal disease. Yet the strictly moral approach has been of limited value. This is attributed, at least in part, to the fact that molding of character and establishment of standards of personal conduct should and must be accomplished by the home, the church and the community at an earlier age. Because venereal disease is a biologic accident of the sex act an effective moral program will prevent infection, but the imparting of proper standards of personal conduct to the individual is not venereal disease education in the sense in which we are using the term and should not be so considered. Therefore the role of the physician and health officer in venereal disease control programs is necessarily limited. He can assume responsibility for the dissemination of scientifically accurate information and for the provision of adequate treatment, prophylactic and epidemiologic facilities. He can and should support and assist those educational programs designed to influence sex behavior; but he cannot be expected to assume primary responsibility for the development of moral integrity.

PROPHYLAXIS

In the Army there seems strong reason to believe that the condom has been the most valuable single venereal disease preventive measure, as evidenced by the extent of its utilization.

Chemical prophylaxis administered at a fixed station, on which great reliance has been placed in theory and in past practice, has been difficult to popularize in this emergency because of the frequent inaccessibility of stations, the time consumed in administering treatment, the messiness, occasional discomfort and lack of privacy. Early in 1943, in an effort to improve individual chemical prophylaxis, the Army in collaboration with the Subcommittee on Venereal Diseases of the National Research Council set about to develop a single tube chemical prophylactic, effective against syphilis, gonorrhea and chancroid. After considerable experimentation an ointment containing 15 per cent sulfathiazole, 30 per cent calomel, 40 per cent petrolatum, 14 per cent light mineral oil and 1 per cent cetyl alcohol was subjected to field trials at six army posts in lieu of the regular station prophylaxis. The instructions were simple and the entire procedure required only several minutes, was acceptable cosmetically, was unaccompanied by discomfort and was easily self administered. At all six of the trial stations the prophylactic rate doubled or tripled merely through the spread by word of mouth that the Army had a new and improved prophylactic. This material has now become a standard Army prophylactic item distributed under the name of Pro-Kit.

It would appear from this experience that one important reason for the failure of individual chemical prophylaxis to take in civilian life has been the unsatisfactory products available and that postwar venereal disease control planning will be incomplete without provisions to make this item freely available at a price commensurate with its cost of production.

VENEREAL DISEASE CONTROL IN NEGROES

The Negro venereal disease rate in the Army has consistently been higher than the white rate. Negro troops have received the basic venereal disease control program given to white troops, and additional specific measures have been directed from a national level. These have been ineffective in lowering the overall Negro rate. However, successful Negro venereal disease control programs are possible on a local level, as demonstrated by the consistently low rates maintained at Tuskegee A. A. F. and several other posts where large numbers of Negroes are stationed. Several of these programs were organized and carried out by superior Negro medical officers, backed by strong command support and utilizing all available control procedures, including suppression of prostitution, educational mediums, recreational facilities, religious appeals, competitions, and the training and development of Negro noncommissioned venereal disease control officers responsible for venereal disease control in their units. These local programs have demonstrated the value of employing specially trained Negro personnel, both medical and lay, and the need for a direct and personalized approach.

CONCLUSIONS

The postwar period will present far greater assets for the control of the venereal diseases than have been available at any previous time, some of which are as follows:

1. A tremendous number of physicians and lay personnel trained and experienced by the Army in the principles of venereal disease control will be available.

2. The dilution of the postwar population by 9,000,000 soldiers will raise the general venereal disease educational level to a new high, and it seems certain that future venereal disease control programs will be accorded increased public support. In this connection, efforts to reimpose a blackout on the venereal diseases are doomed to failure.

3. The remarkable advances in treatment climaxed by the introduction of penicillin will add great impetus toward achieving the goal of universal case finding and case holding.

4. Mass wartime experiences will add considerably to the venereal disease control armamentarium.

These factors, added to the stabilization of community life and the return of opportunity to follow the natural instincts of monogamous relationships, all lead to the conclusion that we shall be presented with an unprecedented opportunity to reduce the incidence of the venereal diseases to a manageable minimum.

THE CLINICAL DIAGNOSIS, PROGNOSIS AND TREATMENT OF ACUTE HEMA- TOGENOUS OSTEOMYELITIS

FRANK D. DICKSON, M.D.

KANSAS CITY, MO.

The title clearly defines the scope of this paper. Etiology will not be discussed; the pathologic changes occurring in bone as revealed by the x-rays have been described by Pierson and Roach.¹ It is necessary, however, in order to lay the groundwork for a discussion of the clinical diagnosis and treatment of acute hematogenous osteomyelitis that certain basic features of its etiology and pathology be commented on. The facts presented are based on the study of 295 cases of the disease treated over the period of the last fifteen years.

Hematogenous osteomyelitis is a pyogenic bone infection. The staphylococcus is the offending organism in approximately 90 per cent of all cases, usually the hemolytic *Staphylococcus aureus*. The next most common organism found in culture is the streptococcus; occasionally a pneumococcus is found. While the staphylococcus is the organism found in 90 per cent of cases as a whole, in children under 2 years of age, the streptococcus is far more frequently the infecting organism—from 40 to 50 per cent. The higher incidence of streptococcal infection in very young children is probably to be explained on the basis of the antecedent source (upper respiratory tract) and the fact that the infant has relatively less natural immunity to strains of streptococci than to staphylococci, as shown by the investigations of Green and Shannon.^{1a}

According to our present understanding of the disease the focus of infection in bone is secondary to a primary focus elsewhere in the body, the pathway of infection being the blood stream; at least no valid reason has been advanced to disprove this view. To meet this accepted basic conception of the origin of osteomyelitis it is necessary to assume that there occurs a bacteremia, produced by a shower of bacteria entering the blood stream from a primary focus of infection already present. Once such a bacteremia occurs, clinically it may

follow one of three courses: (1) The organism in the blood stream may be rendered harmless by the defensive mechanisms of the body and no general or local disease develops, (2) some of the bacteria may lodge in bone, localize and set up an osteomyelitis or (3) the bacteremia may become a septicemia, which in turn results in a pyemia with abscess formation over widespread areas, including the lungs, kidneys, spleen, liver and bone. When the second of these possibilities develops, the bacteremia disappears, usually within twenty-four to forty-eight hours, leaving behind only the local bone abscess and such systemic reaction as may arise from the local pyogenic infection in the bone. When the third course is followed, a blood stream infection persists and a pyemia develops.

When bacteria find their way to the bone and become localized there, a destructive process is set up. The area of bone infection occurs with remarkable consistency in the metaphyseal region of the long bones. The generally accepted reasons for this localization are that the area has a rather large and stagnant blood supply, is an area of rapid growth and is subject in growing children to direct and indirect trauma. These reasons on the whole fail satisfactorily to explain completely the cause for fixation of the abscess in this area. Fraser² offers a suggestion which is certainly worthy of consideration and investigation. He holds that the reticuloendothelial tissue, which is present in abundance in the metaphyseal area of growing bone, is a factor in determining the frequent localization of infection in this area. He reasons that, since one of the important functions of the reticuloendothelial system is that of acting as a defense mechanism against infection, the localization or fixation of the infection in the metaphysis is the result of the defense activities of the reticuloendothelial cells in this area in their efforts to correct a general infection. On such a basis the occurrence of a localized or fixation abscess, while it creates a regrettable and difficult situation as far as the bone is concerned, should be looked on as a providential occurrence, for it is nature's method of producing a defense area from which the factors of immunity are organized and developed. Wilensky's³ point of view is different from the one which holds that the metaphysis is the usual fixation point for abscess formation, and he notes other points which are more frequently involved.

Once bacteria have lodged in the bone, wherever the fixation point may be, they multiply and liberate exotoxins which diffuse into surrounding bone, destroy and break down red cells, coagulate plasma and cause the death of leukocytes. Since this process occurs in tissue which is dense and hard and lacks the elasticity of soft tissue, it disperses rapidly. There occurs extensive thrombosis of vessels, and so there is less opportunity for the defense cells of the organism to wander into the inflammatory region to overcome infection and aid the connective tissue cells in walling off the area. Leukocytes appear in large numbers, but they are fighting a losing battle against the exotoxins and are destroyed, and a proteolytic ferment is liberated which autolyzes or destroys the dead bone and an abscess is formed. The pathologic changes in bone which result are many and varied, but any description of these changes will be omitted here, as they were discussed by Pierson and Roach in their presentation.

Read before the joint meeting of the Section on Orthopedic Surgery and the Section on Radiology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.
1. Pierson, J. W., and Roach, J. F.: The Roentgenology of Osteomyelitis, J. A. M. A. 126: 884 (Dec. 2) 1944.
1a. Green, W. T., and Shannon, J. G.: Osteomyelitis of Infants, Arch. Surg. 32: 462-493 (March) 1936.

2. Fraser, J.: Acute Osteomyelitis, Brit. M. J. 2: 539-541, (Sept. 22) 1934.
3. Wilensky, A. O.: Osteomyelitis: Its Pathogenesis, Symptomatology and Treatment, New York, Macmillan Company, 1934.

CLINICAL PICTURE

The clinical picture about to be presented is not in complete conformity with views widely held. It is, however, a concept of hematogenous osteomyelitis which seems to fit the situation as it has presented itself in our clinic over the period of the last twenty-five years.

The patient with acute hematogenous osteomyelitis is usually a child or an adolescent, although osteomyelitis does occur in the adult. There may be a history of an already existing infection, such as a boil or furuncle, upper respiratory infection or middle ear disease. A history of trauma is elicited in from 25 to 40 per cent of the cases. With this background, although the disease varies greatly in severity, it is usually possible to differentiate two types of onset and, I believe, two types of the disease, based on the mode of onset and the clinical cause. At least the character of the onset of symptoms should be definitely suggestive.

In the usual case the first symptoms are pain and stiffness in the affected region—sometimes in the upper but more frequently the lower extremity. There is disinclination to move the extremity, and it is carefully guarded against jarring. Pain gradually increases in intensity, temperature rises and a mild chill may occur. At this time the limb is usually held in a position of slight flexion of the joint nearest which the infection is located. Flexion of the joint may be permitted without protest, but extension of the joint is always painful and resisted. This finding is a definitely important differential diagnostic fact. The temperature rises rather rapidly to 102-104 F. with a proportionate increase in the pulse rate to 120-130 per minute. The skin becomes hot and dry, the face flushed, the tongue coated and the urine concentrated. In from a few hours to three days the pain in the affected region becomes intense, and the patient will not permit the limb to be moved or even touched without protest. Restlessness and exhaustion due to toxemia develop. With continued high temperature there is a decrease in the intake of fluids, and signs of dehydration appear.

Locally there is definite tenderness to palpation over the involved area, usually the metaphyseal region if a long bone is the site of infection. This area of tenderness to palpation, sharply localized, makes its appearance early in the disease and before local swelling, redness and warmth are evident. A careful, gentle, patient investigation with the tip of one finger will usually localize the tender point, which should be most carefully sought for, since it is the most important early diagnostic sign of osteomyelitis. Later the affected region becomes swollen, red, hot and edematous, and the pain and tenderness become more diffuse. Fluctuation does not as a rule appear until the bone abscess has ruptured through the periosteum and pus has escaped into the surrounding soft parts.

Such a clinical picture with evidence of general toxemia and definite signs pointing toward a localized bone abscess is typical of the usual form of hematogenous osteomyelitis. The patient is ill, sometimes seriously so, but the outstanding feature of the illness is evidence of a localized infection in one bone, rarely more.

The second type of onset differs from that described and should suggest, I believe, a different form of the disease. The onset is usually abrupt and is initiated with a chill, although there may be a prodromal period of one to two days during which time the patient complains of not feeling well, is listless and has no appetite.

After the chill there is a rapid rise of temperature, the pulse becomes accelerated and running, the patient is restless and exhausted, dehydration quickly develops and delirium is not infrequent. The patient is seriously ill and gives evidence of an overwhelming toxemia. There may be localizing signs of pain and tenderness in the upper or lower extremity, but these are not outstanding and may be absent or masked by the serious systemic reaction. Patients presenting such severe constitutional symptoms with few or no localizing symptoms are in all probability suffering from a septicemia which is the real disease. If the septicemia persists there follows a pyemia with abscess formation in various organs and tissues of the body, including bone. That this condition should be called an osteomyelitis is, I feel, decidedly questionable, since such abscesses as may occur in bone, usually not single but multiple abscesses, seem to be incidental to the septicemia and pyemia—in other words, they are only part of the general picture of multiple abscess formation. This type of osteomyelitis has been called the fulminating form; it is resistant to all efforts at control and frequently ends fatally.

LABORATORY FINDINGS

The blood picture in acute hematogenous osteomyelitis depends on the duration and severity of the infection. As a rule in the ordinary case there is a leukocytosis of from 15,000 to 25,000 per cubic millimeter. With severe and overwhelming infection there may be little or no increase in the leukocyte count. Failure in leukocytic response is a grave sign, for it suggests that the patient's resistance is low and the effects of the infection overcome the defense mechanisms which case the prognosis is grave. The differential count usually shows a predominance of polymorphonuclear leukocytes.

Early in the disease the red blood cells show little effect, but as the disease progresses anemia develops, probably as the result of the destruction of red cells by the toxins liberated.

Blood cultures are important both in indicating the form of the infection and in determining the presence of a septicemia. A blood culture should be made on all suspected patients on admission to the hospital and should be repeated at intervals. In the type in which a bacteremia occurs and a localized bone abscess develops early the blood culture may be and frequently is negative. A positive blood culture persistently present indicates a true septicemia, and the outlook is extremely grave.

The antitoxic titer level is important in estimating the natural defense against the toxigenic staphylococci. The antitoxic titer of individuals varies considerably, some having a definitely lower titer than others; adults have a higher titer normally than infants and children. A low titer signifies a low natural resistance to the staphylococcal toxin and indicates that the natural defense mechanisms cannot be relied on to be of much assistance in combating the infection. It is an interesting fact that the titer in chronic osteomyelitis is invariably quite high.

DIAGNOSIS

In children in the age group of from 3 to 15 years any acute illness characterized by a sudden onset, high temperature, pain over a bone in the vicinity of a joint and a high leukocyte count should strongly suggest hematogenous osteomyelitis and a careful examination for local tenderness over a bone end should be carried

out. It is difficult to understand the frequency with which this condition is overlooked, since its incidence is moderately frequent and its distribution wide. The outstanding diagnostic finding is localized tenderness over the bone, usually a long bone, and most commonly over the metaphysis. This localized area of tenderness can usually be disclosed by a patient, gentle and searching examination.

The condition which most closely resembles osteomyelitis is pyarthrosis; the evident enlargement about the joint with the swelling confined to the outlines of the synovial pouch, limitation of motion in the joint in all directions—not merely in extension—and the less toxic early course of the disease should make it possible to differentiate between these two conditions.

Cellulitis is frequently mistaken for osteomyelitis, as its onset is similar; that is, with chills and fever. In cellulitis, however, the redness and edema appear very early; in fact, coincident with the systemic reaction, the tenderness is over the entire area of involvement, not definitely localized, the pain is much less and of a different character and the toxemia not nearly so pronounced.

Aside from these two conditions there should be little difficulty in making a diagnosis of osteomyelitis if a careful examination is made and the patient's general condition evaluated. The facts are, however, that in a very high percentage of cases osteomyelitis goes undiagnosed for days and even weeks and until extensive bone destruction has taken place. Rheumatism was the diagnosis most frequently made in these neglected cases in the past; but fortunately today, except in isolated communities, the profession has awakened to the possibility of bone infection, and an earlier diagnosis is being made with greater frequency.

PROGNOSIS

The prognosis in acute hematogenous osteomyelitis depends on whether the case is one in which there is a transient bacteremia with the formation of a local bone abscess or whether it is one in which a true septicemia is present with pyemia. In the former the prognosis as to recovery is good; in the latter it is grave, and a fatal outcome is a frequent result. Because these two types have never been separated in statistical studies, figures on the mortality rate in osteomyelitis vary widely from 2 per cent up to 30 per cent. Obviously, with such wide variation in figures, quite different types of cases are being dealt with. In the series presented there were 38 cases of acute osteomyelitis with a mortality rate of 11.2 per cent. All but 2 of the fatal cases in this group were the fulminating form with septicemia and positive blood cultures. The average mortality, as nearly as can be determined in the usual type of the disease, is somewhere around 10 to 15 per cent. The mortality in the septicemic type is well over 50 per cent—perhaps higher. There is great hope, however, that with the advent of the sulfonamides and penicillin the mortality rate in the fulminating type will be materially decreased. The mortality rate in infants is high. Green and Shannon¹ report a general mortality rate of 21 per cent, with a rate of 45 per cent in those under 6 months of age.

The prognosis, so far as healing of the local bone focus is concerned, is poor. A great majority of the patients 3 years of age or older pass on to the chronic stage; in infants, however, there is little tendency for the disease to become chronic. The difference in the

behavior of bone in extremely young children compared with older children and adults has been considered to be due to three factors: (1) The infection in young children is frequently a streptococcus, which causes less bone destruction than does the staphylococcus; (2) the large cancellous spaces in the infant allow the infection to pass more readily from the site of the origin into the subperiosteal space, and the periosteum, being loosely attached in the infant, separates readily or ruptures, thus affording early drainage for the infection and insuring minimal bone destruction; (3) dead bone in young children absorbs very quickly, and new bone formation is rapid. The tendency to chronicity in older patients is largely due to inadequate treatment in the acute stage. It is to be hoped that a better understanding of the disease and its early treatment, combined with the use of the sulfonamides and eventually penicillin, will change this picture to a much more favorable one.

TREATMENT

There is at the present time considerable divergence of opinion as to the proper procedure to follow in the treatment of acute hematogenous osteomyelitis. The differences of opinion which exist over the type of treatment to be followed could speedily be harmonized, I believe, if it was recognized from the beginning that acute hematogenous osteomyelitis can as a rule be separated into that type in which the constitutional symptoms are comparatively mild, while the signs of local infection in the bone are definite and outstanding; and a second type in which the constitutional symptoms are severe and overwhelming, while the local symptoms of abscess formation are absent or masked by general symptoms. In the first type the picture is that of local infection, associated with which are the constitutional symptoms concomitant with a localized infection. In the second type the picture is that of a systemic infection, a septicemia, as a consequence of which a pyemia develops with multiple abscess formation in bone and other tissues. The basic pathologic condition and clinical course of these two types are entirely different, I believe, and consequently each demands a different kind of treatment.

In discussing the treatment of the acute stage of hematogenous osteomyelitis, the cases should be divided into two groups: group 1, infants—that is, children under 2 years of age; group 2, children over 2 years of age, adolescents and adults.

The treatment of osteomyelitis in infants should be conservative. The different reaction to infection which bones in infants display as compared with mature bones has been discussed under prognosis; it is this difference in behavior which makes conservative treatment so successful in infants. The care of the patient rather than the osteomyelitis is the important consideration. Supportive treatment, prevention of dehydration and immobilization of the affected extremity are the essentials of management.

Antistaphylococcus serum should be administered if the infection is due to the staphylococcus and if the serum is available.

The unquestioned bacteriostatic effect of the sulfonamides and penicillin should be taken advantage of. All information indicates that the sulfonamides are of definite value in controlling the disease. It seems highly probable from the present available reports that penicillin therapy will prove even more effective than the sulfonamides.

4. Baker, L. D., and Shands, A. R., Jr.: Acute Osteomyelitis with Staphylococcemia, *J. A. M. A.* **113**: 2119-2124 (Dec. 9) 1939.

amount of bone destruction and lessen the danger of reinfecting the blood stream with the probable development of metastatic abscesses. On this basis, my position in treatment has been drainage of the local bone abscess at the earliest moment; that is, at the earliest moment that the patient's general condition will permit, except in those cases in which the acute onset with a chill, the grave constitutional symptoms and lack of signs of a definite bone localization indicate a septicemia.

The time selected for drainage is determined by the patient's general condition. If this is relatively good and dehydration has not set in, immediate operation may safely be performed. If there is evidence of grave toxemia and dehydration, the operation should be delayed until rest, the administration of saline-glucose solution and blood transfusions convert a poor surgical risk into a safe one; this may be a matter of twenty-four hours or a week or more. In the meantime, blood cultures should be made frequently to determine whether a septicemia is present and, if so, its course.

When the decision to drain has been reached, drainage should be thoroughly established but with a minimum of surgery. An adequate incision should be made in the soft parts over the point of greatest tenderness and, following muscle planes as far as possible, carried down to the bone, which should be thoroughly exposed. Ordinarily, a window about 1 inch square should be removed from the cortex of the bone with an osteotome for adequate drainage. If haste is desirable, one or two drill holes may be substituted for window drainage. Incising the periosteum without opening the cortex of the bone does not provide adequate drainage. The wound should be lightly packed with petrolatum gauze or gauze soaked with diluted solution of sodium hypochlorite. I prefer the latter. The extremity is then immobilized in plaster or, if the patient is quite ill, by traction or sandbags.

In a fair percentage of cases with early drainage and the administration of the sulfonamides, extensive necrosis of bone will not occur, and the wound under careful aseptic dressings (Dakin's irrigation or packing with sterile petrolatum gauze) will heal by granulation. Twenty-nine out of 33 cases of acute hematogenous osteomyelitis in this series had early drainage and Carrell-Dakin treatment. Seven, or 28.5 per cent, healed without additional surgery. Only 5 of these 7 cases were treated after the introduction of the sulfonamides. Penberthy and Weller⁵ report 19 cases treated by early drainage and the systemic administration of sulfathiazole. Of these, only 2 had later sequestration and required additional operation.

It is only fair to state that today there is a definite trend against early drainage of the localized bone abscess in hematogenous osteomyelitis. This position has received additional impetus with the introduction of the sulfonamides. The bacteriostatic effects which the sulfonamide drugs exert seem unquestionably to bring about the disappearance of the constitutional symptoms and control the local bone infection in some but not in all cases. These drugs, however, can have no effect on the local bone destruction which has occurred before the infection was brought under control, and the necrotic tissue which results remains as a possibly quiescent but certainly unhealed focus in the bone. As long as the x-rays reveal definite areas of bone destruction

and sequestrum formation, no matter how silent the area may be clinically, the case cannot be spoken of as cured but only as one which shows a clinical recession with a quiescent bone focus. Such quiescent areas may remain dormant for years and in some cases permanently. However, an examination of a number of cases treated by the administration of the sulfonamides without drainage has shown that in practically all a careful x-ray examination revealed persistent areas of bone destruction which are readily differentiated from the surrounding normal bone. Such areas constitute potential sources of trouble in the future. Wilson and McKeever⁶ report 3 cases treated by administration of the sulfonamides without drainage with subsidence of acute symptoms, in which several months later drainage was established because of persistent local induration. Thick, soft, hyperplastic bone was encountered and granulation tissue was found in the medullary canal when drainage was established. Smears and cultures revealed staphylococci. These findings clearly indicate that such quiescent foci are not really sterile but that they probably harbor dormant bacteria capable of activity.

Treating a bone abscess with the sulfonamides and without drainage may result in putting out the fire; but the ashes remain, and only too frequently ashes which have embers likely to be fanned into activity by such breezes as lowered resistance or local trauma to the quiescent area. My observations have convinced me that sooner or later a large percentage of these quiescent foci do become active. Whether penicillin proves to be an agent which, more powerful than the sulfonamides, will completely sterilize such areas of infection only time will tell. Until then the preponderance of evidence is in favor of early drainage of the osseous focus in acute hematogenous osteomyelitis except in the fulminating type with septicemia and pyemia, when the drainage of a single focus, where there are probably others present, cannot be expected to have any helpful effect but will probably do harm.

1103 Grand Avenue.

ABSTRACT OF DISCUSSION

DR. HOWARD HATCHER, Chicago: In children osteomyelitis is primary in a metaphysis and not in an epiphysis. That is true of both pyogenic and tuberculous infection. It is a rare case that shows evidence of primary infection of an epiphysis. In adults, however, osteomyelitis or other infection may start in epiphyseal bone. Acute osteomyelitis does not alter the bone structure for several days. The ideal time for treatment is before there has been alteration sufficient to produce changes in the roentgenogram. Usually, however, by the time the patient undergoes treatment areas of bone absorption are seen in the metaphysis. These areas of rarefaction in acute osteomyelitis do not denote the extent of the disease. They represent only the initial lesion, and extension through the shaft may have occurred by the time the bone is opened. The fate of bone in osteomyelitis depends on the age of the patient, the virulence of the infection and to some extent on treatment. It has been mentioned that in infancy bone may be killed and rapidly absorbed. Even sequestrums in infants may be absorbed without the necessity of surgical removal. The extent of necrosis of bone cannot always be determined from early roentgenograms. Sometimes necrotic bone in the presence of an organism of low virulence does not become separated and may undergo replacement by living bone. In virulent infection dead bone, particularly in the cortex of the shaft, separates

5. Penberthy, G. C., and Weller, C. N.: Chemotherapy as an Aid in the Management of Acute Osteomyelitis, *Tr. South. S. A.* 53: 391-408, 1940.

6. Wilson, J. C., and McKeever, F. M.: Hematogenous Acute Osteomyelitis in Children, *J. Bone & Joint Surg.* 18: 328-332 (April) 1936.

and the overlying periosteum may or may not form new bone. If periosteum is killed by the infection, it fails to form an involucrum, and pathologic fracture may be the result. Another point to be considered is the fact that periosteal ossification occurs also in diseases other than osteomyelitis. It should be emphasized that periosteal new bone formation with raylike vertical striations is not pathognomonic of tumor. The onion skin appearance oftentimes cited as being typical of Ewing's tumor may be seen also in osteomyelitis. Roentgenology of bone is an interpretation of the pathologic changes within that bone. If specific terms are employed, calcification and ossification cannot be used interchangeably. Calcification implies deposition of lime salts such as is seen in necrotic tissue. Ossification, it is true, ultimately involves calcification, but only in the process of new bone formation.

DR. E. E. MANSUR, Jefferson City, Mo.: A man aged 32, with a chronic osteomyelitis of the humerus in the metaphysal area characterized by great pain and limitation of motion of the shoulder was treated with sulfonamides and general tonics over a period of six weeks, with no relief. Later it was thought that he might have a secondary infection with Vincent's disease from a primary infection found about his teeth. Since 50 per cent of all of us harbor Vincent organisms in our mouths, I think we shall see more and more of it, because dentists are not taking an active interest in Vincent's disease. This man having been treated in the usual orthodox manner with heat, massage, restoratives and sulfonamides, without any benefit, was given neoarsphenamine with dramatic effect. Within twenty-four hours his pain had been relieved far more than any other therapeutic measures had accomplished. He was given weekly injections. At the end of a month he was completely well, although the bone changes had not been great, as shown by subsequent roentgenograms. His reaction to arsphenamine, given because of definite dental Vincent's infection, with failure of all other forms of therapy and occurring almost overnight, suggests that Vincent's spirillum is perhaps one of the causative organisms of osteomyelitis. The x-ray changes were those of a periostitis. The case was followed for three months, when after its incipient stage subsequent films showed perforation of the cortex; but the changes were not those seen in syphilis of the bone. This patient had a negative Kahn reaction.

DR. CARL E. BADGLEY, Ann Arbor, Mich.: I was quite impressed by Ward McNeil's demonstration of the effectiveness of his bacteriophage. I have been impressed with the efficacy of Ward McNeil's synthetic bacteriophage in the treatment of staphylococcal infections. In 13 septicemias there were 12 survivors, one of the lowest death rates by any form of treatment. In our clinic we did just as Penberthy and Wal-lard did, and treated our patients by the usual surgical procedures plus oral sulfonamide. Second, we tried oral sulfonamides alone and were dissatisfied. Third, we tried oral sulfonamide and drainage of abscess in soft tissue only. Fourth, we tried the procedure which is my thesis, that one can improve the possibility of cure of this condition by early operation, by drainage of the metaphysal area, by implantation locally of the sulfonamide or penicillin in addition to the oral method. From the good results in chronic osteomyelitis we felt we might close the wound after draining the bone, and we have primarily closed the wound after we have instilled sulfonamide or penicillin into the wound. We have then closed it and have had excellent results, with the exception of 1 case in which it was necessary to open and drain further.

DR. FRANK D. DICKSON, Kansas City, Mo.: Two cases of osteomyelitis treated with systemic medication (sulfonamides and penicillin) but with no local drainage showed extensive bone destruction and still active bone foci after eight weeks and several months, respectively, from the date of onset. The third case, which was treated by the systemic administration of the sulfonamides and local drainage, showed a minimum bone destruction and complete healing within nine weeks of the onset. The importance and necessity of early drainage in acute hematogenous osteomyelitis with localized bone abscess is thus suggested.

Clinical Notes, Suggestions and New Instruments

INTRAVENTRICULAR PENICILLIN

A NOTE OF WARNING

HERBERT C. JOHNSON, M.D., AND A. EARL WALKER, M.D.
CHICAGO

The intraventricular use of penicillin has been suggested for cases of meningitis which do not respond to the parenteral or intrathecal modes¹ of administration. Since reports of penicillin given in this manner are rare, it seems pertinent to present the following case, which emphasizes certain reactions to the intraventricular injection of the drug:

D. K., a boy aged 22 months, was admitted to Bobs Roberts Hospital on April 25, 1944. His parents stated that for the previous two months they had noticed that the child was becoming increasingly irritable. Two weeks before admission the patient had vomited four to six times over a period of three days. About the same time they had noticed that he was unable to turn his left eye outward. Birth, developmental and family histories were noncontributory to the present illness.

Physical examination at the time of admission revealed that the child was well developed and well nourished and was not in acute distress. The physical examination, except for the neurologic findings, was normal. His head was obviously enlarged, measuring 52 cm. in occipitofrontal circumference. The scalp veins were prominent over the temples. Macewen's sign was strongly positive. There were 3 diopters of papilledema bilaterally and a left abducens palsy. The tendon reflexes were slightly hyperactive, and the plantar responses were bilaterally extensor. The neurologic examination was not otherwise abnormal.

Laboratory examination showed a red blood cell count of 5,350,000, a white blood cell count of 17,450 and a hemoglobin of 12.5 Gm. The sedimentation rate was 42 mm. per hour. Differential count and urinalysis were normal. The Wassermann test on the blood was negative. Cultures of the nose and throat grew no pathogenic organisms.

The patient's temperature at the time of admission was 37.8 C. (100 F.). Three days later the temperature was 39 C. (102.2 F.) and it was found that the child had a left otitis media. A left myringotomy was performed, obtaining a small amount of thin pus, culture of which was sterile. The patient was given 0.5 Gm. of sulfadiazine every four hours.

Roentgenologic examination revealed a normal chest and normal mastoid air cells. There was no radiologic evidence of a lead line in the wrist. Roentgenograms of the skull showed diastasis of the sutures. An electroencephalogram showed increased electrical activity ranging from about 1 to 11 per second. There was no localization of the abnormal activity.

The clinical impression was that the child was suffering from internal hydrocephalus. It was thought that the most likely etiologic factor was a medulloblastoma of the cerebellar vermis. By May 4 the otitis media had cleared and the child's temperature was normal. Because of the patient's age, it was deemed advisable to do a decompressive procedure followed by x-ray therapy rather than a suboccipital craniectomy.

Accordingly, on May 4, with the child under ether anesthesia, bilateral perforations were made in the posterior parietal regions. No subdural hematoma was found, and exploration with the brain puncture needle encountered no abscess nor unusual resistance. The right lateral ventricle was then tapped, and 5 to 10 cc. of clear fluid escaped. There did not appear to be much tension within the ventricular system, and there was only a moderate increase in ventricular fluid. A catheter was then inserted through the tract of the brain puncture needle and left in the ventricle. To the external end of this catheter had been tied a condom. The wounds were then closed.

The day following operation, x-ray therapy was started. During the succeeding eleven days the patient received about 750 roentgens (depth dose), a posterior port and two lateral

From the Division of Neurological Surgery of the University of Chicago.

1. McCune, W. S., and Evans, J. M.: Intraventricular Penicillin in the Treatment of Staphylococcal Meningitis, J. A. M. A. 125: 705 (July 8) 1944.

ports being used. Beginning on the day of operation ventricular fluid was aspirated from the condom at periodic intervals as indicated in the table. During the first postoperative week the patient did very well. The temperature remained normal and the child was eating well, seemed cheerful and in no distress. Sulfadiazine, which had been stopped on the day of operation, was given again in doses of 0.5 Gm. every four hours on May 7. On May 11 the temperature reached 39.4 C. (102.9 F.) and on the following morning the aspirated fluid was faintly cloudy. Cultures of this fluid were sterile, but fluid aspirated two days later contained *Staphylococcus albus*. Since the administration of sulfadiazine (the blood level of which varied between 11.2 and 17.5 mg. per hundred cubic centimeters) did not appear to be controlling the infection, it was decided to give the patient penicillin.

In spite of the elevated temperature, the child did not appear ill and seemed to be in excellent condition. On May 15 the patient was given 100,000 Oxford units of penicillin in six intramuscular doses (10,000 units per cubic centimeter of isotonic solution of sodium chloride). On May 16 it was decided to administer the penicillin intraventricularly through the catheter. On this day at 4 p. m. 50,000 Oxford units of penicillin was given intraventricularly in 5 cc. of isotonic solution of sodium chloride. At 5 o'clock the child was found unconscious in a state of collapse. The blood pressure was unobtainable and the pulse was faint and thready. The skin was cold and ashen. There was pronounced stiffness of the neck. The extremities were flaccid, and the tendon reflexes were absent.

Laboratory and Clinical Observations

Ventricular Fluid								
May 1944	Leukocytes			Protein, Mg. per 100 Cc.	Culture	Intra- ventri- cular Penicillin (1,000's Units)	White Blood Cells (1,000's)	Highest Temper- ature, C.
	Total	Poly- morpho- nuclear	Percentage					
4	127	0	35	...	..	14.5	39.2
5	900	5.0	44	...	..	...	39.6
6	123	...	47.5	...	..	...	39.6
12	...	...	...	Negative	..	9.2	38.6
13	1,500	3.0	...	...	..	...	39.8
14	1,300	21.0	196	Staph. albus	..	...	39.2
15	1,500	41.0	191.3	Staph. albus	..	22.1	39.6	
16	856	55.0	106.4	Staph. albus	50	26.0	39.2	
19	744	55.0	224	Staph. albus	30	...	40.2	
20	836	57.0	105.6	Staph. albus	30	11.4	40.6	
21	519	60.0	78.8	Negative	30	...	38.2	
22	266	38.0	103.3	Negative	30	4.4	39.6	
23	...	...	...	...	..	6.7	37.6

The condom was removed from the catheter to allow free drainage of ventricular fluid, and a hypodermoclysis of 500 cc. of isotonic solution of sodium chloride was started. After fifteen to twenty minutes the patient began to move his eyes slightly and to respond faintly to painful stimuli.

At 7 p. m. the patient had a generalized convulsion lasting several minutes. One grain (0.06 Gm.) of phenobarbital sodium was given intravenously and 2 grains (0.13 Gm.) subcutaneously. During the course of the next hour the patient had frequent paroxysmal generalized clonic spasms of the arms, legs and neck. About midnight he began to respond and by morning was sitting up in bed playing with his toys. On May 17 the ventricular catheter slipped out when the dressing was changed. During the next two days, May 17 and 18, the temperature was normal and no penicillin was given. On May 19 the temperature rose to 39.8 C. (103.6 F.). The patient did not, however, appear ill. At 10:30 a. m. he was given 15,000 Oxford units of penicillin in 3 cc. of isotonic solution of sodium chloride through a ventricular puncture needle introduced into the right lateral ventricle. Four hours later the patient was conscious and responsive but was having frequent twitches of the right arm and leg. These lasted for several hours. At 6 p. m. that day another 15,000 Oxford units of penicillin was given intraventricularly. The patient had been started on phenobarbital 0.06 Gm. twice a day on May 17, and no further convulsive movements were seen after May 19. For the following three days, May 20, 21 and 22, the child was given 15,000 units of penicillin intraventricularly each morning and each evening.

The patient gradually began to improve. Within a week his temperature subsided to normal values. On June 7, 1944 the

patient was discharged. At that time he was up and walking with a normal gait. There was a very minimal papilledema of the nasal margin of both disks. External ocular movements were normal. The tendon reflexes were intact, and motor power was good.

On July 31 the patient was seen again in the outpatient department. Although he had had no further roentgen therapy, he had been quite well since discharge from the hospital. His right optic disk was normal. External ocular movements were full. He presented no abnormalities on physical or neurologic examination.

COMMENT

The original disease from which this child suffered cannot be diagnosed with certainty at this time. It is possible that the internal hydrocephalus was the result of a cerebellar medulloblastoma which melted away with the roentgen therapy or equally possible that it was due to serous meningitis or arachnoiditis. The genesis of the infection in the child would appear to be due to the relatively poor ventricular drainage, so that *Staphylococcus albus*, normally found in the skin, gained access to the ventricular system. That the child had little systemic reaction to the infection except for the fever suggests that the organism was avirulent or that the child had a high degree of immunity.

At the time of the administration of the intraventricular penicillin it seemed probable that the vascular collapse and convulsive seizures were to be associated with his infection rather than with the medication. The dosage of penicillin was perhaps higher than necessary, but we had no information on this point at that time. When the infection returned after the first intraventricular injection of penicillin, a much smaller amount of penicillin was used for intraventricular injection and the child was carefully watched for ill effects. That twitches occurred in the right arm and leg would indicate that local irritation at the site of brain puncture was not responsible, because the drug was injected into the right lateral ventricle. Perhaps the convulsive manifestations were minimized by the rather large doses of phenobarbital given the child. It is interesting to note that subsequent intraventricular injections had no apparent ill effects.

Whether the injection of the drug was responsible for the reaction or merely coincidental with an exacerbation of the primary disease process may now be answered in view of further studies. A critical review of the history leads one to the conclusion that the intraventricular injection of the drug was too closely associated with the reactions to be merely coincidental. The child until the time of intraventricular injection did not appear ill but was quite active and alert. The similarity of the convulsive aspects of the reactions are noteworthy. That subsequent injections of the drug did not result in ill effects does not eliminate the possibility that the drug was responsible for the first two reactions. This case stimulated further experimental investigations of this hypothesis. While these studies are not yet complete, it is evident that in cats and dogs intraventricular injection of penicillin may result in convulsive seizures or death due to circulatory collapse. Moreover, electroencephalograms of many patients receiving penicillin are distinctly abnormal. Penicillin applied to the cerebral cortex of monkeys, dogs and cats in doses as low as 500 Oxford units will induce clinical and electroencephalographic manifestations of convulsions. For these reasons we believe that the reaction in the case reported was due to the injection of the penicillin within the lateral ventricle of the cerebrum.

It seems probable that this severe reaction was due to some idiosyncrasy to the drug, because in other patients as much as 100,000 Oxford units of penicillin has been injected intraventricularly without untoward effect. That such severe reactions may occur, however, should deter one from the intraventricular use of the drug unless absolutely necessary.

SUMMARY

A patient with *Staphylococcus albus* infection of the ventricular system was treated with intraventricular injection of 50,000 Oxford units. Within an hour the patient was comatose and in vascular collapse. Supportive therapy improved the condition, but the patient had clonic spasms of the arms, legs and neck for several hours. Within a day the patient appeared normal. Two days later, when the infection became recrudescent, 15,000 Oxford units of penicillin was injected into the

right lateral ventricle. Four hours later the patient had twitchings of the right arm and leg, which disappeared in a few hours. After further intraventricular injections of penicillin without reaction the patient recovered completely. A critical analysis of the case and experimental studies on man and animals support the hypothesis that the intraventricular injection of the drug was responsible for the reactions. It is suggested that intraventricular penicillin be used in small amounts and with caution.

OCCUPATIONAL DERMATITIS CAUSED BY GERMICIDAL POWDER "MICROLENE"

ALEXANDER STERLING, M.D., PHILADELPHIA

Mrs. L. H., aged 26, a waitress, married eight years, with 1 son aged 7 years, first called at the office June 7, 1944 with a severe dermatitis of four years' duration.

She had been in good health until shortly after she changed her place of employment. She had a maculopapular eruption (areas of serous exudate covered with crustations and areas of parchment-like induration with a severe inflammatory base). The lesions began from the tips of the fingers of both hands, extending over the dorsum of the hand and the anterior and posterior surfaces of the forearm and arm, more pronounced on the flexor surfaces of both forearms, where the induration and erythema were extreme. In the last year it had also spread to the back of the neck. The rash was accompanied by severe pruritus, especially at night, and for weeks at a time the patient obtained little sleep.

While at work, whenever she entered the kitchen, fumes and steam from dishwashing machines produced pruritus on the exposed parts of her body, especially the hands and neck. The condition was unchanged in winter or summer, although it varied in intensity from time to time. The management of the firm where she was employed as a waitress referred her in the course of the four years to various skin clinics and to several dermatologists, but she obtained no relief.

The patient had had the usual childhood diseases. Otherwise the history was noncontributory. The menstrual history was normal. There was no other personal family allergy.

Laboratory examinations gave physiologic findings for blood count, blood chemistry and the urine. The Wassermann reaction was negative.

A complete allergic investigation was made. The patient was tested for foods, inhalants, pollen, bacteria, molds and dust with no positive reactions. After considerable painstaking questioning, the following outstanding facts strongly suggested that this was an occupational dermatitis:

1. Although she had been a waitress for many years, she recalled that in the first week at this new establishment she had assisted at the dish washing for a day, and her fingers and hands began to itch for a short time.

2. The induration was always more pronounced on the flexor surfaces of both forearms, this being where she carried the dishes. Although the dishes were thoroughly dried after the washing machine, I suspected that enough of the chemicals used in the washing machines remained on the dishes to produce contact dermatitis (plus moisture from the skin).

3. The fingertips and fingers remained always either split and oozing or crusted, evidently because of constant use of damp cloths to wipe the tables, which retained enough of the chemicals previously used in washing the dishes.

4. The mere presence of the patient in the kitchen during dish washing time was sufficient to produce extreme exacerbation of the existing pruritus, presumably from the steam containing the chemicals in the dishwashing machines.

5. On further investigation it was found that, in addition to soap powders, a germicidal powder called "Microlene" was used in the dishwashing machines. Patch tests were made with the soap and Microlene powders. Soap powders were negative, but the Microlene chemical produced a strongly positive reaction (plus 4).

6. The patient was advised to abstain entirely from work. Within two weeks she was completely free from any dermatitis and pruritus.

COMMENT

The germicidal chemical powder "Microlene," used in dishwashing machines of a certain chain restaurant, has a warning on the label stating that "it may produce a skin irritation in those handling it while dish washing."

I doubt that the restaurant management or the firm ever suspected that it could produce a dermatitis so severe from such presumably indirect contact as handling the dry dishes after several rinsings, or the cloth used to wipe the table on which the dry dishes were placed, or just being in the room with the vapors.

SUMMARY

A germicide used in dish washing was found responsible for a severe dermatitis and pruritus of four years' duration. The patient was a waitress who had no direct contact with the chemical. It was not recognized previously as the etiologic factor, because her contacts with this germicide were indirect and seemingly unimportant.

1737 Chestnut Street, Philadelphia 3.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following report.

HOWARD A. CARTER, Secretary.

RADIOEAR, MODEL 45-M, ACCEPTABLE

(Magnetic Air Conduction Receiver)

Manufacturer: E. A. Myers & Sons, 306 Beverly Road, Mount Lebanon, Pittsburgh 16.

Model 45-M Radioear with magnetic air conduction receiver is a three vacuum tube instrument consisting of a transmitter, a midjet magnetic receiver and a battery unit.

Dimensions.—Transmitter 4 inches by 2 inches by $\frac{3}{4}$ inch. Receiver, magnetic, $\frac{3}{4}$ inch in diameter. Transmitter, receiver and cords weigh 5 ounces. Batteries weigh $12\frac{1}{2}$ ounces.

Batteries.—A battery, 1.5 volts; current drain at full volume, 79 milliamperes. B battery, 45 volts; current drain at full volume, 1.1 milliamperes.

Acoustical Gain.—Observations were made by trained observers using fitted ear molds in a tone field, within a sound proof room, seated 5 feet from a loud speaker delivering frequencies of pure sine wave characteristics. The readings are in decibel gain.



Model 45-M Radioear

Volume Control Set at	Position of Tone Control		Frequency						
			256	512	1,024	1,448	2,048	2,896	4,096
$\frac{1}{2}$	Center		13	12	13	16	13	13	3
$\frac{3}{4}$	Center		15	14	23	22	20	17	6
Full	Center		18	17	26	18	23	22	8

Overall gain for speech 45 decibels.

Physical and Mechanical Features.—The instrument consists of a black plastic case of pleasing appearance. The front surface design is indented. The on and off switch, which is also the volume control, is a knurled disk placed at the top of the transmitter. A tone control at the upper right hand corner gives three distinct frequency emphases. The aid is divided into discrete sections, each of which can be replaced by a service part when servicing is needed. This can be done at the dealer's office without using a soldering iron to make the connections.

Performance.—The instrument operates in a completely satisfactory manner. There is an absolute minimum of case noise, little if any distortion at maximum intensity. Cord noise and feedback squeal are negligible. The three position tone control operated as represented.

Recommendations.—The Council on Physical Medicine voted to accept the Radioear, Model 45-M (magnetic air conduction receiver), for inclusion in its list of accepted devices.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - CHICAGO 10, ILL.

Cable Address . . . "Medic, Chicago"

Subscription price Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, JANUARY 27, 1945

1945 DUES NOW PAYABLE

As a convenience as well as a reminder to those Fellows and subscribers who have not paid their 1945 annual dues, a colored remittance slip is enclosed in this issue of *THE JOURNAL*. These slips take the place of personal bills. If each subscriber and Fellow whose 1945 dues are not yet paid will send his remittance promptly, a vast amount of clerical work and expense will be saved. Since many physicians subscribe to *Hygeia* and to one or more of the A. M. A. special journals, the names and subscription rates of these publications are also listed on the slip. The ones desired may simply be indicated by a check mark and remittance included with the annual dues. The colored slip is cut to form an envelop when folded and does not require a postage stamp.

PENICILLIN IN WARFARE

A supplement to the July 1944 issue of the *British Journal of Surgery* presents a symposium on penicillin in warfare. In a foreword Major Gen. L. T. Poole states that employment of penicillin in the most forward surgical units as a prophylactic against wound sepsis emerges as perhaps the greatest application of the lessons learned. Under battle conditions a long interval must sometimes elapse before definitive surgical measures can be undertaken. Penicillin can be used to bridge this gap and delay, modify or even prevent the development of sepsis. Florey and Jennings point out that the substance is the most powerful antibacterial agent which has yet been brought into clinical use. Pure penicillin is likely to remain for a long time a chemical curiosity, but its antibacterial capacity is well established. It will completely inhibit the growth of

the most sensitive organisms, such as the gonococcus and staphylococcus, when diluted at least 1:50,000,000. Penicillin was shown experimentally to be bacteriostatic and not bactericidal. Its action was not significantly impaired by serum, blood, pus or tissue autolysates. In general, gram positive organisms and the gram negative cocci are sensitive and the gram negative bacilli insensitive, but some species show strain variation. The early work on penicillin showed it to be remarkably nontoxic to the body tissues.

The rapid absorption and elimination of penicillin, whether after injection or from a wound surface, suggest that relatively large doses should be given and frequently repeated. For systemic administration intramuscular or subcutaneous injection is usually used. Excretion of the drug is so rapid that probably little advantage is to be gained by increasing the single dose above 15,000 units, the size originally established as generally effective.

Lieutenant Colonel Jeffrey stresses that the treatment of battle casualties demands the intelligent combination of resuscitation, operative surgery and chemotherapy with its specific action against the common bacterial invaders of war wounds (staphylococci and clostridia in the early stages and streptococci in the later stages). Penicillin is the most effective and least harmful agent yet discovered. The drug has three main spheres in war surgery: (1) to prevent infection of the wound soon after wounding, (2) to control infection in the first two weeks and (3) to combat sepsis in the later stages. It is in the control of infection in the first two weeks, that is, at the forward base hospitals, that greatest value can be expected from penicillin. The tissues are fresh, the infection is recent, the organisms are not shut away in fibrous tissue and sequestrums, and have not become intractable and insensitive to chemotherapy. In general, systemic therapy is the method of choice in large traumatized areas that are inaccessible to local powder or solution and accessible only to the drug circulating in the blood stream. This involves most of the severe casualties, such as fractures, gas gangrene, septicemic states, amputation stumps and multiple severe flesh wounds. Lieutenant Colonel Bentley reports the results in a consecutive series of 200 casualties with flesh wounds treated by early secondary suture with local penicillin. Primary healing was obtained in 190 (95 per cent). These wounds were typical of soft tissue battle injuries, and the results show that in the presence of penicillin wound infection is controlled and that a high proportion of success follows early secondary suture. Lieutenant Colonel Brown reports much the same results. He feels that they are so good and the period of morbidity is so lessened that all soft tissue wounds, however small, should be sutured with the aid of penicillin. However, he warns that penicillin has in no way replaced and

can never be a substitute for thorough primary surgical treatment.

Furlong and Clark state that penicillin failed to control sepsis fully and did not diminish the incidence of chronic infection in open fractures of the femur. They stress, therefore, that penicillin is not a substitute for surgery and that the greatest care and attention must be given to surgical technic and to fundamental surgical principles. Jeffrey treated 33 cases of gas gangrene, with mortality of 36.4 per cent. He believes that penicillin has a definite place alongside surgery and antiserum in the treatment of gas gangrene.

D'Abreu and his associates treated 64 severe chest wounds with penicillin. They have been particularly impressed with the capacity of the pleural cavity to retain instilled sodium penicillin for as long as three days. This means that a reservoir of the best known bacteriostatic agent can be maintained at the site of infection. Conversely, passage from the blood stream into the pleural cavity is slight. The method of intrapleural instillation is thus both more economical and far more effective than that of parenteral therapy. As a prophylactic against infection, penicillin is of great value and has been used in major thoracotomy operations with satisfactory results. The authors recommend that in the forward areas the attempt to prevent infection of hemothoraces should consist in thorough aspiration combined with penicillin instillations. This would appear to offer the best hope of preventing the present high rate of hemothorax infections seen in the theater of war.

The most brilliant results with penicillin were obtained in the treatment of gonorrhea. Major Robinson of the U. S. Army reports 1,000 cases of sulfonamide resistant gonorrhea treated with penicillin, of which 94.7 per cent were free from gonorrhea after one course of treatment with 100,000 units of penicillin given intramuscularly in 10,000 unit doses every hour or in 20,000 unit doses every three hours. In this series 5.3 per cent required the second course of penicillin, varying from 100,000 to 150,000 units. Seven per cent had developed complications other than posterior urethritis. Penicillin hastened recovery in this group. There were no serious toxic reactions. Of 100 cases of acute gonorrhea previously untreated, 97 per cent responded successfully to one course of 100,000 units of penicillin and only 3 per cent required an additional 100,000 units. The author concludes that penicillin is the most effective agent for treating all types of gonorrhea. If the supply was unlimited it would be the therapy of choice.

Wise and Pillsbury of the U. S. Army confirm in general the report of Mahoney and his associates on the rapid spirocheticidal effect of penicillin in men, the prompt regression of early syphilitic lesions and the absence of significant reaction to treatment. Penicillin therapy in syphilis offers possibilities of great impor-

tance to military personnel, since prolonged treatment with arsenic and bismuth is impossible to carry out continuously under many conditions in a theater of operations. The immediate effects of penicillin therapy are superior to those observed after intensive arsenotherapy.

CONCENTRATED INFLUENZA VACCINE

In 1942 Hirst and his associates¹ of the International Health Division, Rockefeller Foundation, developed a new method of concentrating influenza vaccine from allantoic fluid infected with virus. When allantoic fluid from 13 day old infected chick embryos is frozen and thawed, a fluffy white precipitate appears. From 90 to 95 per cent of the virus is usually carried down in this precipitate. The precipitate goes back into solution when the fluid is warmed to 37 C.

While the temperature was kept at approximately 0 C. the precipitate from a large volume of infected allantoic fluid was removed by centrifugation and resuspended in one tenth the original volume of supernatant fluid. The resulting tenfold virus concentrate was then devitalized by the addition of 0.4 per cent formaldehyde solution. Equal volumes of type A and type B concentrate thus prepared were mixed and thoroughly homogenized. The homogenized mixture was distributed in ampules in 25 cc. amounts, frozen and vacuum dried.

As a test of the immunizing power of this bivalent vaccine the dried product in each ampule was dissolved in 50 cc. of warm saline solution and 2 cc. of the resulting solution injected subcutaneously into each of 100 human volunteers. Two weeks after this injection the mean antibody titer of the volunteers was higher than that previously obtained with nonviable vaccines. It was at least as high as the peak titer which follows the injection of similar amounts of living virus concentrated by centrifugation. Six to nine weeks later the antibody titer showed a pronounced drop from the two week level, with a still further drop by the end of five months.

During the last two years² the prophylactic efficiency of this concentrate has been tested in seven different penal institutions in five widely separated states. The tests were made on about 3,000 volunteers, with an equal number of nonvolunteers serving as controls. The vaccine was injected subcutaneously in 1 cc. volumes. Slight redness and swelling at the site of the injection with a moderately sore arm were common for twenty-four hours, with a mild febrile response in about 1 per cent of the cases. Titration of the serums of the vaccinated inmates two weeks later showed an average specific antibody titer five times that of the prevaccina-

1. Hirst, G. K.; Rickard, E. R., and Whitman, L.: *Proc. Soc. Exper. Biol. & Med.* 50: 129 (May) 1942.

2. Hirst, G. K.; Rickard, E. R., and Friedewald, W. F.: *J. Exper. Med.* 80: 265 (Oct.) 1944.

tion average of the same persons. The average titer fell to 2.5 times the prevaccination level by the end of eleven to fourteen months.

The Commission on Influenza³ found that the prophylactic effects of influenza vaccines are greatest during the second week following injection, at which time it reduces the average attack rate of influenza by about 85 per cent. The postvaccination immunity decreases in efficiency after the second week, affording but a 40 per cent reduction in the attack rate by the end of six weeks. Hirst found that the average attack rate from eleven to fourteen months later was 5.5 per cent with his nonvaccinated controls, while the rate was 3.6 per cent with the vaccinated inmates. The reduction in attack rate was therefore about 35 per cent, which in his opinion is "insufficient for practical purposes."

Hirst concludes that "there would be much greater economy in the administration of vaccines of this type if they were given in the face of an outbreak, after its identification, rather than if the vaccine was administered in advance of each epidemic season, since the exact seasonal onset and yearly periodicity of influenza epidemics is too capricious to permit accurate prediction." Other investigators³ have shown that influenza immunity may be expected within eight days following administration of a nonviable vaccine.

Current Comment

MEDICAL EDUCATION AND INDUSTRIAL HEALTH CONGRESSES CANCELED

In response to the urgent request of the U. S. War Committee on Conventions and in accordance with the plea of the director of War Mobilization and Reconversion, James F. Byrnes, the Annual Congress on Medical Education and Licensure, which had been scheduled to meet at the Palmer House in Chicago February 12 and 13, and the Annual Congress on Industrial Health, scheduled for the Drake Hotel February 13-15, have been canceled. The decision not to hold these important meetings was made only after careful consideration of all the factors involved. The schedules of these congresses had been planned to deal principally with problems connected directly with the war effort. In order that the material prepared may be made widely available, those who were to have appeared on the programs of these congresses will be asked to send their papers to the respective secretaries of the Council on Medical Education and Hospitals and the Council on Industrial Health. These papers will then be considered for publication in full or in abstract in *THE JOURNAL* and will be included in full in special reprints which will be available to interested persons.

3. Commission on Influenza, a Clinical Evaluation of Vaccination Against Influenza, J. A. M. A. 124: 982 (April) 1944.

A PRACTICAL METHOD FOR DETERMINATION OF BLOOD VOLUME WITH THE DYE T-1824

A number of methods have been devised for determination of blood volume; the dye method of Keith and Rowntree has probably been of the greatest clinical value. The method, however, with the modifications introduced in order to secure greater accuracy, has become elaborate and time consuming and requires expensive equipment. Gregersen¹ has described a new dye method which was recently developed for the armed forces. The new technic is the result of several years' work on various aspects of the dye method and of two years' experience with blood volume measurements in various types of experimental shock in animals and in the study of shock in man. According to Gregersen the assumptions on which the determinations of blood volume are based have been extensively tested under abnormal as well as normal circulatory conditions and have been confirmed by factual data. From this evidence it is possible to define the limits of the error introduced by simplifying the determination on man and to show that this error is negligible in comparison with the reduction in blood volume observed in shock caused by trauma or hemorrhage. Briefly the method includes the following steps: 1. The plasma concentration of the dye T-1824 is measured with the portable Decade Photometer designed by Nickerson. 2. The total plasma volume is obtained from the dye concentration in a single blood sample drawn ten minutes after the dye injection. 3. The critical and troublesome procedure of measuring out an exact amount of dye at the time of making the determination is eliminated by using ampules containing a standard amount of dye solution of known concentration. This also eliminates all calculations from the determination of total plasma volume. By reference to a chart the plasma volume is obtained directly from the Decade Photometer reading. The total blood volume is then calculated from the plasma volume and the hematocrit. 4. The hematocrit may be determined with the copper sulfate-specific gravity method instead of with a high speed centrifuge. With the addition of the latter technic all the equipment is readily portable. This method makes it possible to determine the plasma volume and the total blood volume rapidly and with sufficient accuracy for practical purposes. Since the reduction in blood volume precedes the appearance of the symptoms of shock, it constitutes a valuable prodromal sign. Early determination of blood volume may therefore be useful as a means of predicting whether or not shock is impending. With this information available, shock can be combated before it develops. Intravenous therapy aims to achieve restoration of the normal volume as well as the normal composition of the blood.

1. Gregersen, Magnus I.: A Practical Method for the Determination of Blood Volume with the Dye T-1824, J. Lab. & Clin. Med. 29: 1265 (Dec.) 1944.

The data furnished by the hematocrit and plasma protein measurements may be misleading. Gregersen points out that the danger lies not only in failure to maintain an adequate blood volume but also in the excessive use of plasma and of other blood substitutes, thereby running the risk of inducing heart failure or pulmonary edema. In these cases a determination of the blood volume provides a reliable guide to therapy.

EXPERIMENTAL HYPERCHROMIC ANEMIA

Currently no entirely satisfactory experimental procedure is available for the assay of the anti-pernicious anemia factor. Much interest, therefore, attaches to a recent report by Davis¹ on the production of a hyperchromic anemia in dogs. Choline chloride in doses of 10 mg. per kilogram of body weight was administered once daily by mouth for twenty-five days and then the same amount was given three times a day. A reduction of 30 to 43 per cent occurred in the number of erythrocytes, with a concomitant increase in the color index and also in the relative volume index. The anemia would therefore appear to have hematologic aspects of pernicious anemia. Furthermore, intramuscular administration of purified liver extract and of dried stomach brought about a remission of the condition accompanied by mild reticulocytosis, despite continued choline feeding. The suggestion is made that retardation in erythropoiesis is brought about by the choline through vasodilatation in the marrow, thus producing the observed anemia. Whether or not these promising observations lead to an experimental method for estimating quantitatively the anti-pernicious anemia factor depends on further coordinated laboratory and clinical investigation.

SPECIAL SCHOOLS FOR CHILDREN WITH HEART DISEASE

The Jesse Spalding School is one of four elementary schools in Chicago designed to furnish normal school and environmental education for physically handicapped children. Children with cardiac disorders have been admitted to these schools as a group through the influence of the Chicago Heart Association since 1924. Recently Kohn and McEldowney² surveyed a group of children who attended the Spalding school. The survey covered approximately a ten year period. Of the 130 examined and interviewed, 104 had either improved or remained in the same cardiac classification since leaving the school. The youngest was 17 years of age and the oldest 33 at the time of the recheck physical examination. There were 65 males and 65 females. Thirty-two of the women were married; 14 had borne 1 child, 3 had 2 children, 1 had 3 children, 2 had had four pregnancies and 2 were pregnant at the

time rechecked. None of them reported that the heart condition had adversely influenced the pregnancy or labor to any great extent. Almost all in the group were working, and their jobs covered a wide range of occupations, including a commercial artist, an office worker, a butcher, a plumber's helper, a coal man, a truck driver, a waitress and a soldier. The investigators concluded that a special school for cardiac children can carry on where the convalescent home leaves off and enables the long continuance of the kind of medical supervision which a child with rheumatic heart disease requires. Such a school also makes for a more normal life for cardiac children of school age with limited capacity for activity and, through the contacts made with parents as well as children, facilitates their education in the practical aspects of the type of living suitable for them as children and adults. This experience confirms the advantages of the special school for children with heart disease and suggests the extension of this type of endeavor to other communities where it may be practicable.

PALMAR SWEATING

Anatomically there are more sweat glands per square area in the palm than anywhere else in the body. The amount of perspiration on the palm, according to Kuno,¹ is from five to ten times as great as that of the general body surface. Palmar sweating differs from that of the general body surface because under ordinary conditions it is not influenced by outside temperatures. Mental stimuli may evoke palmar sweating, and the palm is one of the few places where emotional sweating occurs. Silverman and Powell² developed a colorimetric test for determining the presence and the amount of palmar sweating. Ordinary mimeograph paper is soaked for three minutes in a 5 per cent solution of tannic acid, dried and cut into the desired dimensions. The part to be tested is thoroughly dried, after which 25 per cent solution of tincture of ferric chloride is evenly applied to the area with a cotton applicator. The area is then dried thoroughly and contact is made immediately thereafter between the chemically treated paper and the part to be tested. Contact is maintained for three minutes. The tannic acid reacts with iron to form a stain on the paper ranging between gray blue and blue black. The size and intensity of the resulting pattern are directly proportional to the amount of sweat secreted. The authors studied the palmar sweating response in 1,100 patients in an army general hospital. A high percentage of these patients showed manifestation of a disturbed autonomic nervous system, one of the striking features of which was palmar sweating. The authors conclude that excessive palmar sweating is a cholinergic phenomenon related particularly to emotional activities. Viewed in this light the determination of the intensity and the amount of palmar sweating acquires a special clinical significance.

1. Kuno, Y.: *Physiology of Human Perspiration*, London, J. & A. Churchill, 1934.

2. Silverman, Jacob J., and Powell, Verron E.: *Studies on Palmar Sweating*, *Am. J. M. Sc.* 208: 297 (Sept.) 1944.

1. Davis, J. E.: *Am. J. Physiol.* 142: 402 (Oct.) 1944.

2. Kohn, Kate H., and McEldowney, Ruth P.: *The Cardiac Child in a Special School*, *Am. Heart J.* 28: 491 (Oct.) 1944.

MEDICINE AND THE WAR

ARMY

DRIVE TO ENLIST WACS FOR HOSPITALS

General of the Army George C. Marshall, chief of staff, U. S. Army, recently announced a new and vigorous recruiting drive to enlist Wacs for the newly created Women's Army Corps Medical Units for service at the Army's sixty general hospitals in this country. Women qualified for training as medical and surgical technicians, clerical workers and other skilled women are urgently needed to fill these hospital units to aid in the care and rehabilitation of returned soldiers and release able bodied men from technical and administrative duties. More than 8,000 additional Wacs are required for this purpose.

The plan is to assign a company of 100 women to each of the 1,000 bed hospitals and an additional company of the same size for each additional 1,000 beds in the larger hospitals. These companies will be made up of medical and surgical technicians primarily but will include some women of clerical skills and technicians in other fields, such as x-ray, laboratory and dental. Under an accelerated training program prepared by the Surgeon General's Office, qualified women enlisted as medical and surgical technicians will be assigned to a hospital unit as students after six weeks of basic military training and six weeks at an enlisted technicians' school. They will receive one month of applicatory training after assignment to the hospital. On satisfactory completion of this training they will qualify as technicians with appropriate army ratings and will continue on duty at the place of their final training.

One all Wac enlisted technicians' school has been set up at Wake General Hospital, Camp Atterbury, Indiana, and three others, formerly used to train men, have been opened at Beaumont General Hospital, El Paso, Texas, Fitzsimons General Hospital, Denver, and Brooke General Hospital, Fort Sam Houston, Texas.

LIEUTENANT COLONEL DAN B. SEARCY MISSING IN ACTION

Lieut. Col. Dan B. Searcy, formerly of Washington, D. C., has been missing in action since January 1943. He enlisted in the Army Medical Corps in 1938 and was sent to the Philippine area in 1941. He had a miraculous escape from Mindanao after the fall of Bataan and afterward was stationed in Australia and New Guinea. On Jan. 18, 1942 Colonel Searcy left on an inspection trip by plane and failed to return to his base. The weather was bad and the flight was over uncivilized enemy territory, which prevented any possibility of search or investigation of the loss of the ship. Colonel Searcy has been awarded the Legion of Merit Medal for exceptionally meritorious conduct in the Philippines between Dec. 1, 1941 and April 20, 1942. According to the commendation "No hospital facilities whatever existed on Mindanao, and bombing and strafing of the air base installations started right after Pearl Harbor. During this period Colonel Searcy set up and maintained full base medical and hospital facilities in spite of enemy activity. He maintained an ambulance at the airdrome, and on numerous occasions when bombing and strafing killed and injured personnel on the airfield he personally rendered first aid and directed removal of the injured." Dr. Searcy graduated from Tulane University of Louisiana School of Medicine, New Orleans, in 1934.

BRIGADIER GENERAL SIMMONS APPOINTED LECTURER

Brig. Gen. James S. Simmons, chief, Preventive Medicine Service, Office of the Surgeon General, U. S. Army, was recently appointed by the regents of the University of Michigan as nonresident lecturer in the School of Public Health for the university year 1944-1945.

46TH GENERAL HOSPITAL CITED

The 46th General Hospital, staffed by Oregon physicians and nurses and known as the University of Oregon Medical School Hospital, was recently awarded the meritorious service unit plaque. The citation mentions the efficient and rapid manner in which the hospital organized for treatment of casualties and for its high quality of professional work. The unit was last reported to have been on a beach head on the Gulf of San Rafael in southern France, and it is believed to be the first hospital unit to receive such honors. Col. J. Guy Strohm, Portland, is commanding officer of the 46th General Hospital and was recently awarded the Bronze Star.

AVIATION MEDICAL EXAMINERS

Graduation exercises for a class of fifty-nine medical officers who successfully completed the Aviation Medical Examiners' Course were held January 5 in Stafford Hall at the Army Air Forces School of Aviation Medicine, Randolph Field, Texas. The graduation address was made by Brig. Gen. Aubrey Hornsby, chief of staff, AAF Central Flying Training Command, Randolph Field, Texas. Presentation of the diplomas was made by Brig. Gen. Eugen G. Reinartz, commandant of the school.

FIVE MORE HOSPITAL SHIPS

The War Department stated that five more troop ships will be converted into United States Army hospital ships in order to insure speedier return of America's combat wounded. This addition will bring the number to twenty-nine such vessels operated by the Transportation Corps, Army Service Forces, and will have a total capacity of more than 18,000 sick and wounded. Conversion of the new ships is expected to be completed so that they will be ready for use in June or July.

24TH ANNUAL REUNION OF BASE HOSPITAL NO. 19

The 24th annual reunion and dinner of U. S. Base Hospital No. 19 Association was held January 27 in the Empire Room of the Powers Hotel, New York. The personnel of this unit was organized, equipped and trained under the command of Col. John M. Swan and was made up of doctors, nurses and men from New York. It functioned overseas as a 4,000 bed hospital in Vichy, France.

LIEUTENANT COLONEL LEON H. WARREN APPOINTED TO NATIONAL RESEARCH COUNCIL

Lieut. Col. Leon H. Warren, formerly of Philadelphia, has been appointed a member of the National Research Council, representing the War Department in the Division of Medical Sciences. Colonel Warren is now assistant director, technical division, Office of the Surgeon General, and liaison officer to the National Inventors Council.

NEW CONVALESCENT HOSPITAL ESTABLISHED

The War Department recently announced the establishment of a new convalescent hospital at Camp Upton, New York. The hospital will be under the command of Col. Edward A. Coates, M. C.

PRISONER OF WAR GENERAL HOSPITAL

The War Department recently announced that the hospital at Camp Forrest, Tennessee, is designated Prisoner of War General Hospital No. 2.

ARMY AWARDS AND COMMENDATIONS

Captain Morton M. Spielman

The Bronze Star Medal was recently awarded to Capt. Morton M. Spielman, formerly of New York. The citation accompanying the award read "for heroic achievement in connection with military operations against an enemy of the United States in —, France, on Nov. 12, 1944. Shortly before dark a group of vehicles, while crossing a treadway bridge, received a concentration of enemy artillery fire. Five men in the advance vehicle were seriously wounded and were in urgent need of medical aid. When Captain Spielman reached the bridge he found that the artillery fire was still falling in the area and that the vehicles had continued onward in order to get out of the area. Owing to the intense fire he was forced to leave his vehicle and proceed on foot. Accompanied by his driver he walked through one burning town and proceeded to the next, where he quickly set up his emergency aid station and rendered medical aid to the unit. Two of the men required immediate surgical attention and blood plasma. He performed the necessary surgical treatments under the most adverse conditions, and as a result of his efforts the men survived." Dr. Spielman graduated from the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, in 1937 and entered the service Aug. 1, 1942.

Major General Morrison C. Stayer

The Distinguished Service Medal was recently awarded to Major Gen. Morrison C. Stayer, formerly of Easton, Pa. The citation read "While serving as chief health officer, the Panama Canal, from September 1939 to February 1944, in the face of unprecedented difficulties, his untiring efforts and wise judgment resulted in the maintenance of exceptionally high standards in the Canal Zone and in the cities of Panama and Colon, and in the provision of adequate hospital facilities and personnel. His genius for organization proved invaluable to the government. The manner in which he met all responsibilities placed on him made possible greatly improved health conditions locally and played a large part in the outstanding results achieved in the field of health and sanitation. By his qualities as an officer, a

very difficult situation dealing with standards of sanitation was handled in a superior manner. He rendered invaluable service in the recruiting of laborers from Central and South America for vital defense programs in the Caribbean area." Dr. Stayer graduated from Jefferson Medical College of Philadelphia in 1906 and was commissioned in the regular Army in 1908.

Lieutenant Colonel R. B. Sigafos

At special ceremonies at the Office of the Surgeon General, the Legion of Merit was awarded to Lieut. Col. R. B. Sigafos, deputy director of the training division. He was cited for the outstanding work he did in training and equipping the medical units for the entire new Chinese First Army. Almost insurmountable obstacles of supply and personnel problems, particularly language differences, had to be overcome in the performance of this job. Major Gen. Norman T. Kirk, the Surgeon General, made the presentation. Dr. Sigafos, formerly of Tacoma, Wash., graduated from the University of Nebraska College of Medicine, Omaha, in 1937 and entered the service in August 1939.

Lieutenant Colonel Noah Barysh

The Silver Star was recently awarded to Lieut. Col. Noah Barysh, formerly of New York City, "for gallantry in action in the vicinity of Kej el Guelbi, Tunisia. Although subject to intense artillery fire, Lieutenant Colonel Barysh established a successful chain of medical evacuation units designed to secure maximum efficiency in the care of the wounded. Lieutenant Colonel Barysh repeatedly exposed himself to enemy fire on numerous inspections of aid centers under his command." Dr. Barysh graduated from Rush Medical College, Chicago, in 1933 and entered the service Dec. 21, 1940.

Captain John F. Larsell

The Purple Heart was recently awarded to Capt. John F. Larsell, formerly of Portland, Ore. He was wounded on Sept. 30, 1944 in action in the Nancy-Metz area of France. Dr. Larsell graduated from the University of Oregon Medical School in 1943 and entered the service Dec. 26, 1943.

NAVY

NAVAL AIR PHYSICAL DIRECTOR

Comdr. William R. Kane, U.S.N., was recently appointed head of the Naval Aviation Physical and Military Training Program, succeeding Comdr. Frank H. Wickhorst, U.S.N.R., who has reported for duty at sea. Commander Kane has assumed new duties after many months of combat in the Pacific, where he headed the famous "Grim Reapers" Squadron, which won the Navy Cross for leading a flight group against the Japanese fleet, received two Distinguished Flying Crosses for action at Truk and Palau and a Presidential Unit Citation as a flier on the U. S. S. *Enterprise*.

HOSPITAL CORPS SCHOOL FOR WAVES

The Hospital Corps School for members of the Women's Reserve at the National Naval Medical Center, Bethesda, Md., recently celebrated its first anniversary. Since its inception the school has graduated 5,825 women from a four weeks course which includes classes in first aid, anatomy and physiology, properties of drugs, hygiene and sanitation, nursing, dietetics, weights and measures, medication and sterilization. Under this system the school has been graduating 480 Wave hospital corpsmen each month. In class, junior students are instructed by Wave pharmacist's mates, first class, while senior students receive graduate training from the staff of Navy nurses assigned to the school under the direction of Lieut. Clara Alice Stolp, Nurse Corps, U.S.N.R. The students are sent to the school on completion of recruit training at Hunter College, Bronx, New York, and are under the direct supervision of Comdr. Martin V. Brown, Medical Corps, U.S.N., executive officer in charge of the Hospital Corps School. Graduates of the school are stationed at naval hospitals and in the dispensaries of naval

air stations, training centers and all naval establishments within the continental United States where their services are needed. With the passage of the overseas bill for Waves, a number of these hospital corpsmen have recently been assigned posts in Hawaii.

NAVY AWARDS AND COMMENDATIONS

Lieutenant Stephen L. Derkach

Lieut. Stephen L. Derkach, formerly of Glen Rogers, W. Va., was the recent recipient of the Bronze Star. The citation read "for meritorious performance of duty as a company medical officer of the Second Beach Battalion during the assault on France, June 6, 1944. Lieutenant Derkach, under heavy gunfire, repeatedly exposed himself to administer to the wounded and, without regard for his personal safety, supervised the evacuation of wounded from his section of the beach. His courage and devotion to duty were an inspiration to all officers and men having contact with him. The skill and professional ability displayed by Lieutenant Derkach under most trying conditions were in keeping with the best traditions of the United States naval service." Dr. Derkach graduated from Hahnemann Medical College and Hospital of Philadelphia in 1940 and entered the service Dec. 21, 1942.

Lieutenant Ernest V. Reynolds

The Bronze Star was recently awarded to Lieut. Ernest V. Reynolds, formerly of Barre, Vt., "for meritorious performance of duty as senior medical officer of the Second Beach Battalion, United States Navy, during the assault on the coast of France, June 6, 1944 and subsequently. Lieutenant Reynolds organized

the medical section of the beach battalion and exerted the leadership which enabled medical attention to be brought to casualties on the assault beach shortly after H hour, initiated casualties evacuation on D day and continued it thereafter despite the extremely unfavorable type of beach, shortage of supplies and fire and bombing from enemy airplanes and surface batteries. The bravery and professional ability displayed by Lieutenant Reynolds during this period were in keeping with the best traditions of the United States naval service." Dr Reynolds graduated from Cornell University Medical College, New York, in 1934 and entered the service Nov 16, 1942.

MISCELLANEOUS

WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

Induction Center, Grand Central Palace, New York. Head Injuries, Dr Eli Jefferson Browder, February 9 (to be repeated on February 16).

Gardner General Hospital, Chicago. Brain and Spinal Cord Injuries, Dr Erie Oldberg and Dr Adrien H. P. E. Verbrugghen, January 31. Less Familiar Vascular Syndromes, Dr LeRoy H. Sloan, February 7. Present Status of Medical Planning, Dr Morris Fishbein, February 21.

Station Hospital, Truax Field, Wisconsin. Allergic States, Dr Theodore L. Squier, January 31. Effects of Cold and Dampness, Col Irving S. Wright, February 14. Heart Disease, Dr. Chester M. Kuitz, February 28.

U S Naval Hospital, Great Lakes, Ill. Differential Diagnosis of Some Common Skin Diseases, Dr Francis Seneat, February 6.

Birmingham General Hospital, Van Nuys, Calif. Some Aspects of Peptic Ulcer, Dr William Boeck, February 14.

Regional Hospital, Camp Haan, California. Repair of the Facial Nerve, Dr Pierre Viole, February 6.

Station Hospital, Camp Cooke, California (afternoon session) and Hoff General Hospital, Santa Barbara, Calif. (evening session). Pathogenesis of Rheumatic Fever, Lieut Comdr Robert W. Huntington Jr, February 7. Clinical Aspects and Treatment of Rheumatic Fever, Lieut Comdr George C. Griffith, February 7.

Torrey General Hospital, Palm Springs, Calif. Peripheral Nerve Surgery, Dr Rupert Ranev, February 6. Intestinal Obstruction Due to Regional Enteritis, Lieut Col W. A. Sheehan and Major Ralph Pomeranz, February 6.

U S Naval Hospital, Corona, Calif. Anesthesia, Major C. H. Wainoek and Lieut J. E. Skewis, February 8.

AAF Regional Hospital, Santa Ana Air Base, Santa Ana, Calif. Thoracic Surgery, Lieut Comdr J. E. Dailey and Dr John Jones, February 6.

Station Hospital, Fort Sheridan, Ill. Plexus and Peripheral Nerve Injuries, Dr Paul C. Bucy, January 31.

Vaughan General Hospital, Hines, Ill. Endocrinology, Dr Willard O. Thompson, January 31.

Mayo General Hospital, Galesburg, Ill. Burns and Plastic Surgery, Col William B. Parsons and Dr Christopher D., January 31.

Station Hospital, Camp Ellis, Lewistown, Ill. Psychosomatic Medicine, Dr Sidney A. Portis, January 31.

Regional Hospital, Chanute Field, Rantoul, Ill. Arterial Vascular Disease—Traumatic Lesions, Dr Theodore R. Van Dellen and Major Harris Shumacker, January 31.

Wakeman General Hospital, Camp Atterbury, Indiana. High Blood Pressure, Dr Kenneth G. Kohlstaedt and Dr Robert L. Glass, January 31.

Billings General Hospital, Fort Benjamin Harrison, Indiana. Diseases of the Kidneys—Urogenital Tract, Dr James O. Rutey and Dr Henry O. Mertz, January 31.

A A F Regional Hospital, Santa Ana, Calif. Thoracic Surgery, Dr John Jones and Lieut Comdr J. E. Dailey, February 6.

U S Naval Hospital, Oceanside, Calif. Allergies of Southern California, Dr Robert W. Lamson, February 8.

NEW ADVISORY AND CONSULTANT APPOINTMENT FOR REAR ADMIRAL SMITH

Rear Admiral Harold W. Smith (MC), USN (Ret.), Head of the Research Division of the Bureau of Medicine and Surgery, has been appointed a member of the Advisory Scientific Board of the Gorgas Memorial.

Admiral Smith also has been appointed a member of the Permanent Board of Honorary Consultants of the Army Medical Library.

U S Naval Air Station, North Island, San Diego, Calif. Blood Plasma and Blood Substitutes, Lieut Col R. M. Jones, February 9.

Mary Lanning Hospital, Hastings, Nebr. New Drugs in 1943 and 1944, Dr Lynn T. Hall. Nontuberculous Diseases of the Chest, Dr Francis L. Simonds. Routine Use of Protein Digest Intravenously Following Major Surgical Procedures, Dr Herbert H. Davis, February 7.

Air Base Hospital, Patterson Field, Dayton, Ohio. Diagnosis and Medical Management of Cholecystitis, Dr C. J. De Lor. Surgical Treatment of Acute Cholecystitis, Dr John W. Meany, February 21.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, January 20, page 164)

CONNECTICUT

Waterbury Hospital, Waterbury. Capacity, 372, admissions 8,407. Miss Aida E. Creer, R.N., Superintendent (5 interns, July 1).

ILLINOIS

Loretto Hospital, Chicago. Capacity 159, admissions 4,221. Sister M. Stephanie, R.N., Superintendent (interns). Swedish Covenant Hospital, Chicago. Capacity, 256, admissions 6,365. Mr. Arthur A. R. Nelson, Superintendent (interns, July 1).

LOUISIANA

North Louisiana Sanatorium, Shreveport. Capacity, 121, admissions 3,856. Dr. A. A. Herald, President (intern).

MISSOURI

Menorah Hospital, Kansas City. Capacity, 145, admissions 3,707. Dr. E. Karsch, Administrator (interns).

NEBRASKA

Lincoln General Hospital, Lincoln. Capacity, 213, admissions 4,502. Mr. Robert B. Witham, Administrator (3 interns).

NEW JERSEY

Elizabeth General Hospital, Elizabeth. Capacity, 250, admissions 4,574. Mr. W. Malcolm McCloud, Superintendent (interns). Muhlenberg Hospital, Plainfield. Capacity, 330, admissions 6,319. Mr. John R. Howard, Superintendent (interns, July 1).

NEW YORK

St. Francis Hospital, New York. Capacity, 441, admissions 6,788. Dr. John Dornig, Medical Director (interns).

OREGON

St. Vincent's Hospital, Portland. Capacity, 425, admissions 10,739. Sister Rose Imelda, R.N., Superintendent (residents and interns).

WASHINGTON

Northern Permanente Foundation Hospital, Vancouver. Capacity, 363, admissions 11,122. Dr. J. W. Neighbor, Medical Director (interns, July 1).

WISCONSIN

St. Francis Hospital, La Crosse. Capacity, 315, admissions 7,377. Sister M. Fridoline, R.N., Administrator (Intern, October). St. Mary's Hospital, Madison. Capacity, 203, admissions 7,700. Sister M. Bernadette, R.N., Superintendent (intern, July 1, September 1). State of Wisconsin General Hospital, Madison. Capacity 772, admissions 12,682. Dr. H. M. Coon, Superintendent (resident—medicine). Evangelical Deaconess Hospital, Milwaukee. Capacity, 170, admissions 5,465. J. P. Meyer, D.D., Superintendent (intern, October). Mount Sinai Hospital, Milwaukee. Capacity, 198, admissions 8,551. Dr. M. Rosenzweig, Superintendent (intern, July 1).

ORGANIZATION SECTION

ANNUAL CONFERENCE OF SECRETARIES AND EDITORS OF CONSTITUENT STATE MEDICAL ASSO- CIATIONS

SATURDAY MORNING SESSION, NOVEMBER 18

DR. D. L. CANNON, Montgomery, Ala., Presiding

(Continued from page 169)

Medical Attitudes, Opportunities and Responsibilities in a National Fitness Program

DR. J. W. WILCE, Columbus, Ohio: We have in America today a challenging movement to improve the health and fitness of our people. This new program is full of vital potentialities, and progress has already been made. The medical profession as a whole is deeply concerned. In this war, as in World War I, the high percentage of rejections for service startled America. Following World War I new laws were passed in thirty-six states which required physical education and health education in the public schools. The requirements ranged from twenty minutes to three hundred minutes a week. We required one hundred minutes a week in Ohio, and even this law was recently repealed. In spite of these new exercise, recreation and health education laws and various national health conferences, improved public health administration, vastly increased sports facilities and programs in the interim, the percentage of draft rejections in this war is as great as in the first, if not greater. Even relatively scientific analysis of reasons for this existing condition cannot be made except by those who have the detailed findings and adequate case histories of rejectees and medically discharged veterans. I hope that an analysis of records may be made by some proper agency at a proper time, in the interest of future human improvement.

The appointment of the Committee on Physical Fitness in the Administrative Office of the Federal Security Agency was made in April 1943. John B. Kelly, Olympic single sculls champion, is chairman of this committee by presidential appointment. A joint committee on physical fitness equally representative of the Council on Physical Fitness and the American Medical Association was established. The platform adopted by the Joint Committee on Physical Fitness has as its objective to (1) help each American to learn physical fitness needs, (2) protect against preventable defects, (3) attend to correctable defects, (4) know how to live healthfully, (5) act to require physical fitness, (6) set American standards of physical fitness at a high level and (7) provide adequate means for physical development. At the beginning of his military training the merely healthy boy is dead tired in the evening and falls asleep as soon as he finds a chance. After some months, however, he does the same and far more strenuous work with hardly any effort and takes leave for the evening. All the men gain an increase of strength and reserve strength, which is a physiologic reality and can be expressed in work hours. This conditioning to dynamic strength has been greatly neglected in peacetime; hence a large percentage of our selectees, even those who were healthy from the medical point of view, that is, had no specific defects or illnesses, were conspicuously weak and needed a long period of training and conditioning. It should be remembered, however, that the achievement and maintenance of basic clinical health is a prerequisite for the achievement of physical fitness. "The task of medicine will center around the recognition, prevention and correction of defects, deficiencies, disabilities, disorders and diseases." The fitness movement this time started out in approximately the same way as that of 1919, except that it was aimed nationally.

The joint committee includes the chairman Colonel Rowntree, medical head of Selective Service. There are seven physicians:

both presidents of the American Medical Association, Dr. Fishbein, Dr. Sensenich, Dr. Buie, Dr. Stroud and General Lull, also Dr. Wells and the president of the American Dental Association. On the other side of the fence we have the group that is theoretically directly concerned with physical fitness: the chief of the United States Office of Education, or his representative, Dr. Lloyd, and Dr. William P. Jacobs, president of Presbyterian College, Clinton, S. C. Incidentally, this fine type man is now privately publishing a very personable, attractive new magazine in the interest of the fitness movement. The magazine is called *Aim*. Also Dr. Hiram A. Jones, Ph.D. director of physical fitness for New York State; Mr. A. H. Pritzlaff, president of the American Association for Health, Physical Education and Recreation; Mr. Arch Ward of the Chicago *Tribune*, who has promoted the annual all star football game, and Watson B. Miller of the Federal Security Agency in Washington or his representative. Dr. Frank S. Lloyd, a Ph.D., has served as executive secretary. The assistant to the chairman is Dr. Franz Schuck. This joint committee has held monthly meetings since June. It set up a series of programming committees with co-chairmen, one a layman and one a physician. The committees are on institutional planning, management, labor, promotion, schools and colleges, associated industry, state and local, and medical affiliates.

As many of the members of these committees as could be brought together were gathered in a tremendously significant meeting and submitted tentative programs in Washington, July 28 and 29, 1944. Over a hundred people in these various fields attended this meeting. Since that time the joint committee has given most of its attention to the consideration of suggested programs. The practical picture at the moment is that schools and colleges submitted a valuable proposed plan, outlining much that is already being done in school health and suggesting various advances of educational and medical nature for future development. The Associated Industry, of which committee I have served as medical co-chairman, along with Mr. L. B. Icely, president of Wilson Sporting Goods Company, as chairman, has led the field in a recommended practical program. The government at the present writing has said in effect that it will not subsidize the movement further. The Federal Security Agency paid the traveling expenses of the more than 100 consultants to the big July Washington meeting. The American Medical Association has paid the expenses of its own representatives. I might say that the Ohio State Medical Society entered into that process also. The Associated Industry offers to raise money and to set up a corporation, not for profit, an executive secretary and a board of ten to conduct and promote the future activities.

What has all of this to do with medicine? The Medical Affiliates Committee, which includes state and local medical organizations, has never had an opportunity to meet in its completeness and strength. Dr. West and Dr. Van Etten have been the medical chairmen of this group. In a sense this meeting is the first in which the program is being presented to enough medical representatives on the state level to make it of significance. Practical suggestions to state associations as to the nature and degree of their cooperation in the joint movement have been delayed for many reasons. "Medicine has been notoriously conservative in its approach to this movement and understandingly so. The present situation poses a challenge to the medical profession to get into this movement on high ground, but also bluntly stated and possibly off the record, on the same basis of enlightened self interest that has prompted the Committee of the Associated Industries.

The experience of the preflight naval physical training schools is significant. They started out with five hours a day physical training. They were going to make supermen for aviation. Most of them are now having three hours a day physical train-

ing and sport and, the significant thing, including one hour of the Jacobson relaxation system. In other words, we did not know how far exercise could go to improve the physical fitness of the individual without defeating its own purpose. Two classes at one preflight school scored less in the final pack function test than they did on their entrance to the program.

The stamp of approval of the American Medical Association is an asset of untold worth. I cannot tell this group that. The medical profession should guard it jealously in this movement and in my opinion should withhold it until national, state and local organization is satisfactory to medicine. Proper state and local organization is prerequisite to the success of this movement, because that is where the results are going to be obtained and that is where the decisions are going to be made and the work is going to be done.

The general principles of the splendid statement published by the Council on Industrial Health in *THE JOURNAL*, Nov. 11, 1944, on general medical coverage for industrial employees are directly related to this particular discussion. In providing for this health negotiation and arrangement with industry is included the statement that plans of this nature should include provisions for health maintenance programs, that the physician should be responsible directly to top management and that activities relating to health should be centered in and directed through the medical department. Because of the essential medical nature of such plans, their policies should be directed and their medical phases should be controlled by the medical departments of industry. Much the same principles are appropriate to total community fitness programs, which of necessity include industry as the most immediately important field in the winning of the war from the home standpoint. I believe that Dr. West hopes that this meeting may serve as a start toward a clearance of some ideas on local procedure. The medical plans under which these tremendously increased medical and surgical services are effected will vary, of course. The present organization in some states is beneath the dignity of the medical profession and cannot succeed fully unless it is changed. I have been serving as a representative of the Ohio Medical Society, as a member of the State Advisory Committee, which first was called appropriately "The State Advisory Committee on Health, Recreation and Physical Education." With the same organization it has lately been called "State Advisory Committee on Recreation and Physical Fitness." The organization of the Joint Committee on Physical Fitness is a great victory for medicine, if we can make the principles stick on the state and local level. Our own state advisory committee adopted the principle that this joint committee has adopted. It called in industry last summer and got money from the Kellogg Foundation. The tuberculosis association of the state wangled that out of the Kellogg Foundation in good shape, and a physical educator was sent into the state as the guide of a school and community health program, subsidized by the Kellogg Foundation, the theory of the present situation in the joint committee. Medicine in a sense has to compete with education in the guidance of community health. This physical educator, a young woman, called in thirty-six teachers from high schools in the state. At a two week seminar she placed before them a great many authorities in many public health fields, and then she sent them home to organize senior classes in public health and community and school health programs with the general implication that the school superintendent was to promote and organize community health. I asked the girl about the make up of the committees organized by the superintendents to promote school health and out of the school to expand into a sort of adult education and these are the advisory committees that they set up. In the very small town of Mason they set up as the committee the PTA, American Legion, Eastern Star and Rebeccas, two elementary teachers, two high school teachers, the Red Cross and one local M.D. In a large city, Toledo, the Tuberculosis Association, the Chamber of Commerce, Health and Physical Education, Family Life Association, Social Hygiene Association, one parent of PTA, Toledo *Blade* representative and a school nurse. There is no mention of a physician among that community health promotion group. There may be one, but she did not mention him. Then in another small community which poses as the grass roots picture, here is the community

health committee set up in this particular small town through the superintendent of schools: the mayor, the president of the board of education, the superintendent, a minister, Kiwanis, a dentist, a chiropractor who is half time school physician, a science teacher, a Negro mother active in church, a publicity man and a mother with four children in school. Well, that is the slant local organization is taking in the absence of constructive health leadership from the standpoint of medicine. To me it poses the question as to whether a little more leadership should not be given through regular medical channels on the state and local level.

The basic responsibility of medicine is to participate to the limit of its vast influence through its every channel and medium in the fundamentally sound aspect of the program on all levels. The majority of interested people look for, expect and rely on such participation. Medicine should determine scientifically as far as possible the proper standards of medical and physical fitness and furnish such information to agencies and organizations which can and will use it constructively and conscientiously in the promotion of the movement. Medicine should attempt realistically to change the national, state and local organization to achieve a national, state and local organization of the type deemed best from the medical standpoint for the continued achievement of medical and physical fitness ends. Medicine should face the facts and attempt to educate those of our own membership who need it to the facts, appreciation of values and attitudes inherently necessary to the success of the movement. Medicine should consider seriously and promote the subsidization from medical funds of medical fitness offices, libraries and personnel for medical coordination, education and sound ethical promotional leadership of the profession and the public on national, state and possibly on local levels, as has been done in a limited way by organized medicine with health education. Another responsibility of medicine, of course, is to encourage research in the medical fitness and overlapping physical fitness fields and to exercise alertness and courage in the medical guidance and control of the inevitable attempts at overpromotion of the movement in some special interest.

DISCUSSION

DR. MORRIS FISHBEIN, Chicago: The hearings held before the Pepper committee having to do with the present state of health of American youth as determined by the examinations of the induction boards and Selective Service boards are likely to be a political football in the next few months in the Congress of the United States and in various public hearings. Those who would like to show that medicine has failed in its task of keeping the American people healthy and fit are emphasizing the tremendous number of rejections for various causes and cite these as a failure of the medical profession. Those who are on the defensive, which means the medical profession, are therefore compelled to point out that many of the rejections were for conditions which are neither preventable nor correctable. As Dr. Sausenich pointed out in his appearance before the Pepper committee and has emphasized in his article which appears in *Hygeia*, many of these defects, as, for example, illiteracy, are not in any way at the door of the medical profession. Some of these defects stem from conditions which are wholly economic.

If this state of health of American youth is to be related to the political situations, it is important for the medical profession to be able to say, as Dr. Roger Lee and Dr. Harvey Stone both said in their appearance before the Pepper committee, that the medical profession is assuming the leadership in raising the people of the United States to a high degree of health and physical fitness. We are in an exceedingly fine strategic position at the present time. The National Committee on Physical Fitness has now been changed to a Joint Committee on Physical Fitness, with representation from medicine. In all of the sessions that have thus far been held the medical point of view has prevailed. At present the governors of forty-two states have assured the organization that they propose to set up this movement on the state level. The governors were asked in the individual states to set up state committees, and an outline for a state committee has been sent to each of the governors who has responded favorably. It is proposed that in the setting up of the state committee to

guide this movement there be adequate representation of medicine from the state medical society and that the state medical society be asked to designate to the governor its representation on the state committee. There has also been set up the possibility of county or municipal organization for the same purpose, again the local medical society will be asked to exercise the medical guidance.

The promotion of the movement, as Dr Wilce pointed out, is going to require a large financial subsidy. An arrangement is now in process of being developed and will probably be consummated within the next two weeks whereby all of the industries concerned at all in the health field—the food industry, the athletics industry, the builders of gymnasium and physical equipment of all kinds, will establish the necessary funds. Any literature sent out in relation to this work will be controlled by a small committee which will be predominantly medical. The idea of a one year emphasis has been abandoned. The first to suggest that was Dr West, and I think wisely. As present the great numbers of physicians who are away from the country make it practically impossible to put into effect for the nation as a whole a complete physical fitness program such as is contemplated.

In analyzing the results of the induction boards, it becomes clear that we are not as a nation a degenerate and weak and flabby nation. A degenerate, weak and flabby nation could not have produced an army and navy of ten million men, such as we now have, and carry on the kind of battles that they are now carrying on. It is quite clear, however that frequently in the schools, in the high schools and colleges, we produce young men and women who are physically fit and that at the moment when the child leaves school, if it leaves grade school to go into industry, if it leaves high school to go into industry or if it leaves college or a university to go into industry or other work, degeneration from the physical point of view begins to set in. The School Health Association of the United States has emphasized that point. This means therefore, that we need a nationwide physical fitness movement which will reach the worker in industry regardless of the age level. This movement is now being set up with the idea of reaching that group particularly. Practically all of the great insurance companies of the country are coming into the picture. They realize that they have a special interest in prolonging life and in maintaining health on a high level. In order to carry this movement on there must be an integration of all of the groups concerned. While it is true that medicine must assume the leadership, I think it is equally obvious that medicine represents numerically the smallest group in the picture. When the associates were called into the meeting in Washington there were over one hundred national organizations which take it as a part of their work to carry on a physical fitness movement—the Y M C A, the Y W C A, the 4 H Clubs, the Association for Recreation in Industry and similar groups. They are all willing to accept medical leadership provided medicine assumes leadership.

From the point of view of medicine's self interest already mentioned by Dr Wilce, I doubt that there is anything more important to the advancement of medicine than the idea that, with the cooperation of state authorities and school authorities, physical examinations will be provided for boys and girls of all age levels. From a public relations point of view there is one of the most important opportunities for the medical profession in overcoming a good deal of public antipathy to some of the things that they think medicine stands for and getting the parents of the child closely in contact with the medical profession. The organization of medicine for this purpose, the committee has agreed shall be on the basis of the organization of the American Medical Association and its constituent and component societies. The county medical society and the state medical association will have to carry out many phases of this work. With the lack of available personnel in the medical profession at this time, it would be ideal if every association having a competent woman's auxiliary would enlist the interest of the woman's auxiliary in this project. Thus at least some one familiar with or sympathetic to medicine's programs could be present at every one of the various types of meetings that are going to be carried on in associated groups when this movement gets under way. In order to put this on

a sound medical basis the aid of the National Research Council Division of Medical Sciences, has been enlisted. There is to be a meeting of representatives of the medical profession, including particularly men expert in the field of cardiology and in the field of nerve and muscle physiology, including representative physical educators, to establish standards of physical fitness at various age levels. The public looks to the medical profession for advice and leadership in this field. Such advice and leadership cannot be given until the leaders of the medical profession—that means particularly in this instance the leaders on a state and county level—inform themselves fully about what is going on and thus are able to advise the lay groups who are going to look to you for leadership in this movement.

DR H. H. SHOULDERS, Nashville, Tenn. This movement offers an opportunity for medicine to place some emphasis where it belongs. The absence of physical fitness in young men is not entirely the fault of the medical profession. The parents of these youngsters, the educators and many other people are responsible for that rather than the medical profession. I think the public is too quick to emphasize the matter of a physical examination or even a tonsillectomy in the matter of establishing physical fitness. The matter of physical fitness is much broader than purely medical care. Parents are to blame. It is the heredity of the individual, the early training of the individual, the diet of the individual the home—a thousand things contribute to physical fitness or the lack of it. I should regret it very much if we should ever permit this to become a purely medical movement. At the same time medicine must be in the picture in an advisory capacity and to a prominent extent. These promotions of athletics have never made athletics usable in the production of physical fitness of all the people. They have merely made it a propaganda outfit for the schools. That may be an exaggerated statement, but to a large extent it is true.

DR OLIN WEST, Chicago. I had this subject placed on the program with malice aforethought. The physical fitness movement is being organized on a national basis. I believe that the movement is a most important one and that it should have been started seventy-five years ago instead of at this late date. I have been made the chairman of a group, a programming group designated the Medical Affiliates. The question has arisen as to just how that group shall be composed in its final organization. May I interject the thought that we want to keep medicine in the forefront in this movement not only in a purely advisory capacity but in an authoritative advisory capacity. I do not believe that the movement can ever succeed unless it is largely directed by medicine, and I am sure that it can never succeed unless the medical profession on the state and local level will get wholeheartedly into the movement. My purpose in putting this subject on the program was that you, as secretaries and editors of the constituent state medical associations, might know about it and that I might have an opportunity along with the members of the Joint Committee on Physical Fitness, of which Dr Sensenich and Dr Fishbein who are present, are members, to appeal to you to give all possible aid on the part of state and county medical societies in the promotion and in the operation of this movement. It ought not to be organized on the basis of what exists in the large cities or in the large communities. It ought to be organized with a view to carrying this movement into the isolated communities and even into the strictly rural areas. It is my hope that our state medical associations and our county medical societies will develop programs and will wholeheartedly cooperate with those of us in the American Medical Association, including the Board of Trustees and our entire administrative personnel in putting this movement across.

DR LOU W. MORREY, Chicago. I came here to listen because I was sure that I would gather many thoughts from your deliberations that I could carry back to the American Dental Association that would help us in organizing our program on the state and local levels. The American Dental Association has been in a rather peculiar spot as far as this physical fitness program is concerned. From its inception at least from the inception of the joint committee, our immediate past president, Dr Raymond Wells, was a member of the joint committee but

the American Dental Association officially had not endorsed the program. However, I am happy to inform you that at our meeting last month the House of Delegates of the American Dental Association officially endorsed the program and agreed to cooperate to the fullest extent. We have had a little experience in this physical fitness program over the past two years, however. About two years ago we joined a cooperative movement with Mr. Studebaker of the United States Office of Education in the promotion of his High School Victory Corps Physical Fitness Program. Through the Council on General Health of the American Dental Association we asked our state dental societies and our component dental societies to cooperate with the state superintendent of instruction and the state board of health in the establishing of a Victory Corps Dental Program. It has been brought out here by both Dr. Wilce and Dr. Fishbein how difficult it is going to be to put this program over on the state and local levels. I can assure you from the experience that we have had over the past two years with this high school program that it is a difficult job to put it over. Forty-two states have established committees to cooperate with their state educational and health officials, but of those forty-two states only a few actually put over a statewide program. True in most of the states some of the local communities did a fairly good job in going into the high schools and in having the mouths of the high school students examined and then in following through to have the defects corrected, but the success of the program was very spotty. Dr. Fishbein pointed out, or at least I understood him to say, that in all probability this physical fitness program should be directed at the industry groups. I presume that it may work out that way but I do want to leave this thought with you. As far as the dental program is concerned, we would much prefer to direct our efforts at the school age child. You know just as well as I do that if we are going to control this dental decay situation and if we are going to develop better teeth the best way to do it is to concentrate our efforts on the younger age group to prevent the teeth from becoming decayed, so that we can prevent the installation of bridges and partial dentures. I am sure that I am speaking for the entire American Dental Association when I say that we would like to concentrate our efforts on the lower age group and that we would like to solicit your cooperation in setting up your state programs.

DR. JULIAN P. PRICE, Florence, S. C.: I have been wondering what the state secretaries and editors could actually do. One point that has been brought out which I think every one will recognize, particularly any of us who are pediatricians, as I am, is the apathy on the part of the average practitioner toward the care or the examination of any one who is not actually sick. The average physician does not worry about the child, or even the adult, who comes in without a fever or without a pain. Yet no program of this type can get across in the smaller communities, in the rural communities, unless our general practitioners become interested in the prevention of disease and in the maintenance of good health. The year before the war in my community they put on the type of examination which Dr. Fishbein mentioned at various levels for all the children. It was one plan about which the physicians should have been enthusiastic, and yet only one physician in the community took any interest whatever in it. It seems to me that one of our problems is to educate through the state journals and otherwise the physicians toward a new concept of what health is. We cannot do it suddenly, but we can do it gradually through our editorial columns and otherwise. The Rowntree report, as Dr. Fishbein brought out, is going to be a political football. A great many of the defects which threw these men out of the Army could have been remedied if these boys had gone to their family physicians for examinations. The family physicians did not want to examine them. We have to change that attitude on the part of the family physicians. We must make them realize that either we are going to take the leadership in keeping the nation fit or somebody else is going to do it. In the larger communities where there are school physicians who are employed, they can do the examinations; but in the smaller communities, in the rural communities, it is going to be the family physician who has to do it. I am not so old that I cannot remember the time when the average family

physician did not want to bother with giving shots to prevent diseases in children. I think the pediatricians have blazed the way. Whether the general physicians wanted to do it or not, they have had to do it in self defense or lose their patients and now it has become routine. My plea would be that every editor here of a state journal make it his resolve for the next year or two or three years to carry on a slow but gradual process of education through his state journal, aimed at the family physician and his responsibility in the whole picture.

DR. WEST: Dr. Price, don't you think it is possible that the institution and promotion of this movement, with the cooperation of the officials of the state and perhaps county medical societies, might offer the best opportunity for getting those ideas into the heads of these doctors that you are talking about?

DR. PRICE: I have always realized that doctors are stubborn individuals. They are not going to take advice from the outside. If it comes through the state association and not from somebody else, they will take it.

DR. R. L. SENSENICH, South Bend, Ind.: I want to point out that one feature of this work has not been specifically mentioned; that is, in connection with the improved methods of teaching health in the public schools. The limited amount of health information that is taught to the youngsters in many instances is so presented that it is the least interesting. It is given a place by the authorities rather hesitantly. In many instances we find that superintendents of schools are really pushing all health matters off to the side; if they have a program in which the individual children are given a certain number of squats and arm exercises and a little swimming at regular intervals, that seems to constitute their interest in health. In many states now steps are being taken to cover the whole field, which includes improved methods of teaching and improved methods of presentation as well as the requirement of these exercises that have been set up. Secondly, this is not purely a victory program. It is a matter of trying to instill into the youngster as well as the employee in industry the importance of health as an objective in itself, so that they will be willing to accept those things that are necessary for the maintenance of health in industry and so that the individual coming out of school will not begin this rapid deterioration at the end of his school period. We have been told, where inventories have been made, as Dr. Fishbein pointed out, that children coming out at the high school level can just take the routine Army induction examinations almost 1, 2, 3, except for those conditions which are largely congenital or where requirements are set up in the way of visual standards, and so on, that they cannot meet.

In the main their physical fitness is pretty good, but they begin to deteriorate from that point on because health in itself is not considered an objective. They are unwilling to accept the self disciplines necessary for the maintenance of health, and the same is true in nutrition. Much is said constantly about the medical profession taking the leadership. It depends on what you mean by leadership. Many times that means setting up a pattern or saying what shall be done. In this instance we have the backing of an influential group that will supply funds. We have the opportunity here of a favorable relationship with government and with education. Here then is an opportunity for the medical profession to exercise that leadership. In essence it means that every one of you down in your state and county societies must also be leaders. You must lead in your own communities.

DR. J. W. WILCE, Columbus, Ohio: Dr. Fishbein said that they are sending an outline of state organization to the states. In the last meeting of our state organization I outlined for the ladies and gentlemen the national organization as it is, and I said that in my opinion this was going to add great vitality to the movement. Imagine my delight and surprise to have the physical education chairman come back and say "We had a letter from the joint committee, from Colonel Rowntree, asking us to do these things, and I have written him saying that we are getting along very nicely." The point about the pediatricians was swell. If they would take more interest in scarlet fever and measles we would have fewer ruptured ear drums to take these 218 pound all American ends out of the Army.

(To be continued)

THE HILL-BURTON HOSPITAL CONSTRUCTION BILL

An Analysis Prepared by the Bureau of Legal Medicine
and Legislation, American Medical Association

During the course of the hearings conducted by the Pepper Subcommittee on Wartime Health and Education of the Senate Committee on Education and Labor, the Surgeon General of the United States Public Health Service on July 12, 1944 outlined a broad program for federal participation in the construction of hospitals and related facilities. Subsequently a draft of a bill was prepared and recommended for discussion by the Council on Government Relations of the American Hospital Association to the joint committee of the three national hospital associations: the American, the American Protestant and the Catholic Hospital Associations. The draft was discussed at a meeting of the joint committee held in Washington, Nov. 4, 1944. Representatives of the American Medical Association, by invitation, participated in the discussion.

A number of changes in the draft were suggested and some of these were embodied in a revision of the draft which was introduced in the Senate, Jan. 10, 1945, by Senator Hill of Alabama, for himself and Senator Burton of Ohio, as S. 191. The bill was referred to the Senate Committee on Education and Labor, of which Senator Murray of Montana is the new chairman. It is assumed that this bill will be considered by the recently announced standing subcommittee of nine of the Senate Committee on Education and Labor, which has been created to consider proposed legislation on health. Senator Claude Pepper, Florida, will head the new subcommittee. Other members are Senator James M. Tunnell, Delaware; Senator Elbert D. Thomas, Utah; Senator Robert M. LaFollette, Wisconsin; Senator Kenneth S. Wherry, Nebraska; Senator Lister Hill, Alabama; Senator James E. Murray, Montana; Senator Robert A. Taft, Ohio, and Senator George D. Aiken, Vermont.

PURPOSES OF S. 191

The declared purposes of the pending bill are twofold: (1) to assist the several states to inventory their existing hospitals, as that term is defined in the bill, to survey the need for new construction and to develop programs for construction of such public and other nonprofit hospitals as will, in conjunction with existing facilities, afford the necessary physical facilities for furnishing adequate hospital, clinic and similar services to all people; and (2) to construct public and other nonprofit hospitals in accordance with such programs.

DEFINITION OF TERM "HOSPITALS"

The term "hospital" is broadly defined to include "public health centers and general, tuberculosis, mental, chronic disease and other types of hospitals and related facilities, such as laboratories, outpatient departments, nurses' home and training facilities, and central service facilities operated in connection with hospitals." The definition, however, excludes any hospital furnishing primarily domiciliary care.

CREATION OF FEDERAL ADVISORY COUNCIL

To assist in administering the provisions of the bill on a federal level, a Federal Advisory Council is proposed. The Surgeon General of the Public Health Service will serve as chairman ex officio of the council, and the other eight members will be appointed by the administrator of the Federal Security Agency. The appointed members will be persons "who are outstanding in fields pertaining to hospital and health activities, and a majority of them shall be authorities in matters relating to the operation of hospitals." Their terms of office will be staggered. They will be compensated at a rate fixed by the administrator of the Federal Security Agency but not to exceed \$25 a day while serving on business of the Council and will be entitled to receive an allowance to cover expenses while serving away from their places of residence. The Council must meet at least once a year but may meet more frequently if the Surgeon General deems it necessary. On the request of three or more members, it is made mandatory that the Surgeon General call a meeting.

STATE ADVISORY COUNCILS

Applications that will be submitted to the Surgeon General for approval, proposing surveys of existing facilities and the development of programs for construction, must provide for the designation of state advisory councils to include representatives of "nongovernment organizations or groups, and of state agencies, concerned with the operation, construction or utilization of hospitals, to consult with the state agency in carrying out such purposes."

FEDERAL APPROPRIATIONS

For the fiscal year ending June 30, 1946, total appropriations of \$110,000,000 are proposed. Of this amount \$5,000,000 will be allotted to the several states for surveys and planning, \$5,000,000 to cover administrative expenses in carrying out plans that have been approved, and \$100,000,000 for the construction of hospitals and related facilities. Thereafter such sums for construction and administrative purposes will be authorized for each fiscal year as Congress may determine to be necessary.

ALLOTMENTS TO STATES

The sum to be made available for surveys and the development of programs will be allotted by the Surgeon General to the several states on the basis of their respective populations, financial needs and such other factors as he finds relevant. In connection with these allotments no specific provision appears in the bill for advice from the Federal Advisory Council. From these allotments each state will be entitled to receive, after an application has been approved, an amount equal to the "federal percentage," which will be determined in accordance with regulations made by the Surgeon General. "Such percentage shall be not less than 25 per centum or more than 75 per centum [presumably of the estimated cost of the survey and the development of the program] for any state, and within that range such percentage shall be determined for the several states on the basis of their relative financial needs."

The sum to be made available for construction and for administrative expenses will be allotted on the basis of the population and financial needs of the respective states and, in the case of allotments for construction of hospitals, the relative need for such construction, or, in the case of allotments for administrative expenses, on the basis of special administrative problems. The Surgeon General will be authorized to promulgate regulations under which these grants are to be made, but only on the recommendation of the Federal Advisory Council and after consultation with the state agencies designated in the several state plans. Grants to a particular state may be terminated whenever the Surgeon General finds, after affording reasonable notice and opportunity for a hearing, that there has been a failure substantially to comply either with any provision required to be included in the application for funds for surveys and the development of programs or in any construction plan, or with any regulation promulgated by the Surgeon General.

APPROVAL OF STATE APPLICATIONS AND PLANS

In order to obtain any of the federal money made available for surveys and for the development of construction programs, a state must make an application therefor to the Surgeon General. The application must (1) designate a single state agency as the sole agency to supervise the survey and to develop the program; (2) provide for the designation of a state advisory council to include representatives of nongovernmental organizations or groups and of state agencies concerned with the operation, construction or utilization of hospitals; (3) provide for compliance with standards prescribed by the Surgeon General with the approval of the Federal Advisory Council, and (4) provide that the state agency will make such reports, in such form and containing such information as the Surgeon General may from time to time require and comply with such provisions as he may from time to time find necessary to assure the correctness and verification of such reports. If an application complies with the foregoing requirements, the bill requires the Surgeon General to approve it.

Before a state may participate in any benefit from the distribution of federal money made available for construction programs and for administrative expenses, it must submit a state plan to the Surgeon General for approval. A state plan, to be

approved, must (1) designate a single state agency as the sole agency for the administration of the plan, or designate such agency as the sole agency for supervising the administration of the plan; (2) contain satisfactory evidence that the state agency designated will have authority to carry out such plan; (3) set forth a hospital construction program which the Surgeon General, on recommendation of the Federal Advisory Council, finds to be in accordance with standards prescribed by him with the approval of the Council, and to be sufficient, in conjunction with existing facilities, to provide the necessary physical facilities for furnishing adequate hospital, clinic and similar services to all the people of the state, and which, in the case of a state which has developed a construction program after making the required surveys, conforms to the program so developed; (4) set forth the relative need, determined in accordance with standards prescribed by the Surgeon General with the approval of the Federal Advisory Council, for the several projects included in the program, and provide for construction, so far as financial resources available therefor and for maintenance and operation make possible, in the order of such relative need; (5) provide such method of administration as the Surgeon General finds necessary for the proper and efficient operation of the plan, including provision for affording to an applicant for a construction project an opportunity for hearing before the state agency; (6) provide that the state agency will make such reports, in such form and containing such information, as the Surgeon General may from time to time require, and comply with such provisions as the Surgeon General may from time to time find necessary to assure the correctness and verification of reports, and (7) provide that the state agency will from time to time review its hospital construction program and submit to the Surgeon General and to the Federal Advisory Council any necessary modifications. If a state plan meets these requirements, it must be approved by the Surgeon General.

APPROVAL OF PROJECTS AND PAYMENTS FOR CONSTRUCTION

For each construction project contained in a state plan there must be submitted to the Surgeon General an application by a state or political subdivision or by a public or other nonprofit agency. Each application must set forth a description of the site for such project, detailed plans and specifications, reasonable assurance that the title to the site is or will be vested solely in the applicant and reasonable assurance that adequate financial support will be available for the construction of the project and for its maintenance and operation when completed. No application for a project may be approved by the Surgeon General unless its approval has been recommended by the state agency. The bill does not specifically require the Surgeon General to seek the advice of the Federal Advisory Council in passing on applications for projects.

If an application for a project is approved, the Surgeon General will certify to the Secretary of the Treasury an amount equal to the "federal percentage" of the estimated cost of the construction of the project, designate the appropriation from which it is to be paid and from time to time certify instalments to be paid on account. Certification of instalments will be made after such inspections and on such conditions designed to assure satisfactory completion of the project as the Surgeon General shall determine. Such certifications will provide for payments to the state, except that if a state is not authorized by law to make payments to the applicant the certification shall provide for payment to the applicant.

In determining whether to approve a project, in determining whether to certify an instalment and in any inspection authorized by the bill, the Surgeon General will as far as practicable utilize the services and advice of the Federal Works Agency in reviewing the title, working drawings and specifications of any project, supervising the awarding of contracts and inspecting the performance of the work.

CONFERENCES OF STATE AGENCIES

The Surgeon General will be authorized, in carrying out the provisions of the bill, to invite representatives of as many state agencies to confer with him as he deems necessary or proper. A conference of the representatives of all state agencies, however, must be called annually by the Surgeon General. If five

or more of such agencies request it, the Surgeon General must call a conference of representatives of all state agencies joining in the request.

PROMULGATION OF REGULATIONS

The Surgeon General is authorized to make such regulations and perform such other functions as he finds necessary to carry out the provisions of the bill. All regulations with respect to grants to states for administrative purposes in carrying out plans or for construction projects, however, may be promulgated only on recommendation of the Federal Advisory Council, as before noted, and after consultation with state agencies. The bill provides that, as far as practicable, the Surgeon General shall obtain the agreement of state agencies prior to the promulgation of any such regulations or amendments.

MISCELLANEOUS

A "public health center" within the meaning of this bill means a publicly owned facility for the provision of public health services and medical care, including related facilities such as laboratories, clinics and administrative offices operated in connection with public health centers. A "nonprofit hospital" is defined to mean any hospital owned and operated by a corporation or association, no part of the net earnings of which inures to the benefit of any private shareholder or individual. The money that is allotted to a state for construction purposes may not be expended for the cost of the acquisition of land, except in connection with the construction of public health centers. The bill defines the term "state" to include Alaska, Hawaii, Puerto Rico and the District of Columbia.

Medical Legislation

MEDICAL BILLS IN CONGRESS

Bills Introduced.—H. R. 1442, introduced by Representative Miller of Nebraska, proposes an amendment to the Social Security Act under which federal assistance would be made available to the states to permit them to provide medical, surgical and hospital care to individuals eligible for old age assistance. Any state, it is proposed, may provide for such care either through the purchase of insurance or through the administration of a plan by or under the supervision of a state agency. H. R. 1571 and H. R. 1572, both introduced by Representative Dickstein, New York, propose respectively that no regulation prescribing the qualifications of the members of the Army and Navy nurse corps shall require as a condition for appointment the registration under the laws of any state. H. R. 1188, introduced by Representative Mott, Oregon, would authorize the Director of the Census to issue certifications of birth records. H. R. 1385, introduced by Representative Talbot, Connecticut, proposes that any blind person who is traveling on a train being operated by any common carrier by railroad subject to the Interstate Commerce Act may keep his seeing-eye dog with him in any coach or Pullman car of the train. H. R. 562, introduced, by request, by Representative Rankin, Mississippi, proposes to extend to all service connected disabled veterans in need thereof and feasible therefor eligibility for vocational rehabilitation under the laws administered by the Veterans' Administration. H. R. 1373, introduced by Representative McDonough, California, proposes a federal appropriation of \$2,600,000 for the construction of a marine hospital in or near Los Angeles and for the acquisition of a suitable site. S. 235, introduced by Senator Langer, North Dakota, proposes to prohibit the requirement of the taking of the so-called pauper's oath by certain veteran applicants for hospital treatment or domiciliary care. H. R. 710, introduced by Representative Dickstein, New York, declares it to be unlawful to alter or attempt to alter any part of the inner surface of one's own or any other person's hand or hands for the purpose of preventing identification by the use of fingerprints. H. R. 758, introduced, by request, by Representative Pace, Georgia, provides for the development of better diets and an improved nutritional status for the people of the United States. S. 330, introduced by Senator White, for himself and Senator Brewster, both of Maine,

and H. R. 587, introduced by Representative Smith, Maine, propose the creation of a Division of Water Pollution Control in the United States Public Health Service. H. R. 612, introduced by Representative Tolan, California, and H. R. 1411, introduced by Representative Angell, Oregon, propose to amend the Social Security Act to provide grants to the states for the physically disabled. H. R. 650, introduced by Representative Allen, Louisiana, provides that any person who served in the military or naval forces of the United States during a recognized campaign or expedition, who was honorably discharged from such service, shall be granted hospital and domiciliary care by the Veterans Administration subject to the same restrictions and limitations as are now applicable to World War veterans. H. R. 1289, introduced by Representative Peterson, Florida, proposes to authorize hospitalization of retired officers and enlisted men of the armed forces who are peacetime veterans. H. R. 1412, introduced by Representative Angell, Oregon, proposes to authorize the Secretary of the Interior to locate, establish, construct, equip and operate a hospital for the insane of Alaska. H. R. 1513, introduced by Representative Kilday, Texas, would provide dispensary treatment and hospitalization in Army and Navy hospitals for retired enlisted men of the Army, Navy, Marine Corps and Coast Guard. H. R. 1581, introduced, by request, by Representative Rankin, Mississippi, would provide orthopedic and prosthetic appliances to veterans of any war discharged under conditions other than dishonorable.

STATE LEGISLATION

Arkansas

Bill Introduced.—H. 2 proposes to prohibit a county clerk from issuing a marriage license unless both applicants to the proposed marriage present a certificate of the state health department of any state showing that a blood test of the party has been made and that that test indicated freedom from syphilis in the active stage.

Indiana

Bill Introduced.—S. 37, to amend the workmen's compensation act, proposes, among other things, to require an employer to provide for an injured employee necessary first aid, medical and surgical services and all necessary medical and hospital services limited to that which is reasonably required to cure or relieve the effects of the injury for 180 days, unless the industrial board orders a longer period.

Maryland

Bills Introduced.—S. 66 proposes to prohibit the operation of a hospital without possessing a license to do so from the State Board of Health. The term "hospital" is defined in the bill to mean "any institution which maintains and operates facilities for the care and/or treatment of two (2) or more non-related persons as patients suffering mental or physical ailments." S. 86 to amend the law authorizing the formation and operation of nonprofit hospital service plans, proposes to permit the operation by one corporation of both medical and hospital service plans.

Massachusetts

Bill Introduced.—S. 86 proposes to provide cash sickness compensation for an employee who is unable to work because of sickness. Benefits are to be paid from a fund which is to be established by contributions from the employee of 1 per cent of wages paid him and by an equal contribution from the employer.

Minnesota

Bill Introduced.—H. 82 proposes to create a commission to select a site for the erection of another state school for the feeble-minded and to authorize the establishment of such an institution.

Montana

Bill Introduced.—H. 4 proposes as soon as practicable to establish a new state hospital for the insane and to utilize the facilities presently used for the state hospital for the insane to care for persons who by reason of age and infirmity require care and treatment but who are not actually insane.

Nebraska

Bills Introduced.—L. B. 46 proposes, in effect, to authorize an osteopathic practitioner to execute the physician's certificate as to freedom from venereal disease required with respect to each party to a prospective marriage as a condition precedent to issuance of license to marry. L. B. 47, to amend the medical practice act, proposes that two of the seven members of the board of examiners in medicine and surgery shall be graduates of an accredited school of osteopathy. L. B. 75, to amend the nursing practice act, proposes to prohibit a person from practicing as a registered nurse anesthetist unless possessing a license to practice nursing.

New York

Bills Introduced.—S. 94 and A. 98 propose to enact a separate chiropractic practice act and to create an independent state board of chiropractic examiners to examine and license applicants for licenses to practice chiropractic. The practice of chiropractic is defined as "the science of locating and the removing of nerve interference in the human body, according to chiropractic principles, where such interference is the result of or caused by misalignment or subluxations of the vertebral column. It excludes operative surgery, the reduction of fractures, the prescription or use of drugs or medicine, and the practice of obstetrics." A. 260 proposes to provide for the establishment and administration of a system of compulsory health insurance.

North Carolina

Bill Introduced.—H. 22 proposes that in an action to determine the paternity of a child the court may order the defendant, the mother and the child to submit to a blood grouping test and to make the results of the blood grouping test admissible in evidence when offered by a duly licensed practicing physician.

Oklahoma

Bill Introduced.—H. 81 proposes to prohibit a county clerk from issuing a license to marry unless each party to the proposed marriage files a certificate signed by a licensed physician that the party is free from any venereal disease.

Oregon

Bills Introduced.—S. 3 proposes to authorize the state board of control to establish and operate in Multnomah County a hospital for the mentally diseased if the electorate of the state approve in a referendum provided for in the bill. H. 20, to amend the workmen's compensation act, proposes to provide compensation for a hernia if the injured workman proves that the hernia was the result of strain or injury arising out of and in the course of employment. The present law requires the worker to prove that the hernia was immediately preceded by an accident arising out of and in the course of employment.

Pennsylvania

Bill Introduced.—S. 18, to amend the law regulating the sale of stated hypnotic, analgesic and weight reduction drugs, proposes to add to the drugs so embraced "Amphetaminic (Benz-drinc) and Thyroid." Such drugs can be sold at retail only on the written prescription of a licensed physician, dentist or veterinarian.

South Dakota

Bill Introduced.—H. 21 proposes apparently to add to the act regulating the operation of county hospitals a provision that prohibits the board of trustees of such a hospital and its management from discriminating between practitioners of the various healing arts and to confer on every duly licensed doctor of medicine and osteopathic "physician" the right to practice in said county hospital.

Tennessee

Bills Introduced.—S. 96 and H. 158, to amend the naturopathic practice act, proposes to require an applicant to practice naturopathy to have graduated from a four year high school course, to have completed two years' actual attendance at an accredited college and to have completed courses in general inorganic chemistry, organic chemistry, biology and physics before entering the school where he obtains his "professional" education.

Texas

Bill Introduced.—S. 29 proposes to enact a communicable disease control act which, among other things, (1) defines a communicable disease as any disease that may be transmitted from one person or animal to another person or animal either directly or indirectly; (2) requires physicians to report cases of reportable communicable diseases to designated health authorities; (3) authorizes the establishment of quarantine under the circumstances stated, and (4) states specific control measures for designated reportable diseases.

Utah

Bills Introduced.—S. 6 proposes to authorize the establishment and operation by the state of a hospital for poliomyelitis and children's diseases. S. 7 authorizes the establishment and operation of local full time county, city-county and/or district health departments. S. 23 proposes to permit the county commissioners to authorize the admittance to any county hospital of private patients who are financially able to pay for the cost of care and maintenance at that hospital. S. 26 proposes to prohibit, without a license from the state department of health, the operation of a maternity hospital or place of any kind in which prepartum or postpartum care is rendered. S. 27 proposes to authorize the state board of health to make and enforce rules and regulations providing for the reporting of occupational diseases.

Washington

Bills Introduced.—S. 6 proposes to authorize the establishment and operation of a medical and dental school at the University of Washington and to appropriate \$450,000 for such purpose. H. 13 proposes to make it unlawful for any person, corporation, partnership or association to dispense or sell any lenses for the purpose of correcting or aiding vision except on the prescription of a duly licensed physician or optometrist.

Washington Letter

(From a Special Correspondent)

Jan. 22, 1945.

Request for Medical Insurance Is Renewed

The Social Security Board, in presenting its program for "cradle to grave" social security today, renewed its request for medical insurance. The board's annual report said that medical insurance could be introduced without socializing medicine or regimenting physicians. It pointed out that, despite a common belief that the United States is the world's healthiest nation, other countries have lower death rates and higher life expectancy rates. The board's proposals, expected to incorporate President Roosevelt's forthcoming recommendations to Congress, are substantially the same as those made a year ago. They ask for broadened coverage of old age and survivors' insurance, liberalized unemployment benefits and establishment of medical and disability insurance. Given little attention by Congress last year, they are expected to get further this year, since both political parties urged broader social security coverage during the election campaign. Advocating a system of disability insurance, the report stated that an average of seven million persons were sick or disabled on an average working day. In its request for a system of insurance to prepay the costs of medical and hospital care, the board said that it "disavowed" socialized medicine and "regimentation" of physicians. It said that these "much advertised fears" were "wholly groundless." The board said that the principal reason for the lack of medical care is the present method of paying for it.

Army Would Commission Nurses as Lieutenants

The Army "never had the slightest intention of drafting nurses as privates and will commission them as second lieutenants, whether or not they volunteer," Surg. Gen. Norman T. Kirk told a hearing of the House Military Affairs Committee. He urged an immediate nurse draft, declaring that he was convinced that appeals for volunteers would not bring in the 20,000 nurses needed by June to meet the 270 per cent increase in overseas casualties. General Kirk revealed that the Army is returning 30,000 to 32,000 overseas casualties each month to American hospitals. Last year 8,500 were returned monthly. Furthermore, only 15,000 leave the hospitals each month. Between

May and December of 1944, when 27,000 nurses graduated from hospital schools, only 2,000 nurses volunteered for the Army Nurse Corps, he said. General Kirk said that only 2 per cent of all volunteers had been turned down for not meeting requirements. Every Negro nurse who applies and meets requirements will be accepted, he stated. Male nurses, however, will still not be commissioned in the nurse corps but will have an opportunity to become medical administrative corps officers.

Probe of Veteran Neuropsychiatric Problem Urged

Increased attention is being given here to the problem of the discharged war veteran afflicted with a neuropsychiatric condition as a result of war service. It has been suggested that an overall investigation of veterans' affairs might help to focus attention on this as well as on other aspects of treatment of the returning war veteran. A coordinating agency has been proposed to bring together the activities relating to veterans now being handled separately by the Veterans Administration, the Federal Security Administration, which has state rehabilitation offices, the U. S. Employment Service, the U. S. Bureau of Education, Selective Service, the U. S. Public Health Service and the War and Navy departments. One major difficulty with regard to treatment and restoration of neuropsychiatric veterans is the lack of trained psychiatrists. It was suggested that the G I Bill of Rights provide for their training.

Abolition of Nation's Slums Recommended

Congress has received an estimate from the American Institute of Planners that it would cost 12 to 15 billion dollars to buy up and demolish America's blighted areas. The information came in testimony of Alfred Beltman before the Senate Subcommittee on Postwar Economic Policy. He urged that the federal government back such a program, financed with 750 million dollars a year, which might eventually cost the government nothing under a plan whereby the future yield from redeveloped areas would repay the Treasury.

Soviet Clears Way for UNRRA Supplies

The Soviet Union is clearing the way for shipments of United Nations Relief and Rehabilitation supplies to Poland and Czechoslovakia, according to announcement here of Herbert H. Lehman, director general. He said that the Soviet Union has advised UNRRA that Black Sea port reception facilities and inland transport for food, clothing, medical supplies and other relief goods would be available. Mr. Lehman said it would now be possible to make the first shipment of relief supplies to these two liberated countries.

Official Notes

DOCTORS LOOK AHEAD

The American Medical Association and the National Broadcasting Company are presenting the twelfth consecutive season of nationwide network health broadcasts weekly from January 6 to June 30, 1945. Included in the series are broadcasts relating to wartime and postwar developments, with special emphasis on medical progress of the present day and what it foreshadows for the nation's health in the immediate future.

Topics in the series, which is called Doctors Look Ahead, will be announced weekly in THE JOURNAL and monthly in Hygeia. Fast moving events may, however, cause last minute substitutions. Local newspapers should be consulted for announcements of time and stations. The program will be broadcast each Saturday at 4 p. m. Eastern War Time (3 p. m. Central, 2 p. m. Mountain and 1 p. m. Pacific War Time). When conflicts exist with local programs, rebroadcast may be arranged at hours other than on the network schedule. The next three topics are:

January 27. Penicillin (Dr. Austin Smith).

February 3. Social Hygiene.

February 10. Heart Disease (Dr. Edwin P. Jordan).

The broadcast will be under the supervision of the Bureau of Health Education, whose director, Dr. W. W. Bauer, will summarize each program except when another speaker is announced.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

New Head of Industrial Hygiene.—Irving R. Tabershaw, surgeon, U. S. Public Health Service Reserve, assigned to the division of occupational hygiene, Massachusetts Department of Labor and Industries, Boston, has been assigned to the Alabama Department of Public Health to serve as director of the division of industrial hygiene, Birmingham, effective January 1. Dr. Tabershaw succeeds Dr. George A. Shipman.

CONNECTICUT

Campaign for Society's New Home.—Pledges and gifts are now being received by the Connecticut State Medical Society in its campaign for \$50,000 to defray the cost of a new home for the society.

Society News.—Drs. James R. Miller and Clinton D. Deming, both of Hartford, were chosen president and secretary, respectively, of the New England Surgical Society at its recent annual meeting.

DELAWARE

Society News.—Dr. Thomas Nelson Carey, associate professor of medicine, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, discussed "Rocky Mountain Spotted Fever" before the New Castle County Medical Society of Delaware, January 16, in Wilmington.

ILLINOIS

Fellowship Created for Dr. Stolp.—A medical fellowship has been established at the Evanston Hospital, Evanston, in memory of the late Dr. Rufus B. Stolp, Wilmette, who was for many years chief of the medical staff of the contagious department of the hospital. The fellowship will support a research project at the hospital each year. Dr. Stolp was formerly a resident of Kenilworth and was one of the founders and first president of the Kenilworth Historical Society. He died Nov. 3, 1942.

Chicago

Grants to Illinois.—The University of Illinois College of Medicine recently received a grant of \$23,000 from the Field Foundation for a study in allergy and an anonymous gift of \$20,000 for visual aid studies.

Conference on Rehabilitation Canceled.—The Midwest Conference on Rehabilitation of the Institute of Medicine of Chicago, scheduled to be held February 12, has been canceled. The sixth Frank Billings Lecture of the Thomas Lewis Gilmer Foundation of the institute is also canceled. The lecture was to be given the evening of February 12 at the Drake Hotel by Col. Howard A. Rusk, M. C., chief, convalescent training division, Office of the Air Surgeon.

Administrative Changes at University of Chicago.—Among the recent changes in the Division of Biological Sciences, including the University of Chicago School of Medicine, are the appointment of Dr. William H. Taliaferro, Eliakim Hastings Moore distinguished service professor of parasitology, as adviser to the president in the biological sciences. The deanship vacated by Dr. Taliaferro has been assumed by Roland W. Harrison, Ph.D., professor of bacteriology, who has been acting dean of the Division of Biological Sciences. Dr. Arthur C. Bachmeyer, will continue as associate dean of the division and director of the university clinics, spending part time until 1946 as director of study for the Commission on Hospital Care. Science reports that Dr. Basil C. H. Harvey, acting dean of students of the division, including the school of medicine, during the past year, has retired. F. Joseph Mullin, Ph.D., assistant professor of physiology, has been appointed assistant dean of students, pending the appointment of a dean.

Medical Alumni Group Reorganized at University of Chicago.—The *Bulletin of the Alumni Association* of the University of Chicago School of Medicine has just made its appearance as a new feature of the general reorganization of the medical alumni group that has been under way for several months. Another new feature is the creation of a senate which

will serve as the ruling body; it is composed of the officers, representatives of all classes that have graduated at the medical school, the junior and senior classes, the editorial board of the Yearbook, which was published for the first time in 1944 (*THE JOURNAL*, June 10, 1944, p. 439), and representatives of the faculty. The Medical Alumni Association has been relatively inactive for a number of years; the creation of the senate body, with its broadening powers for development and its plan to hold quarterly meetings will promote a well coordinated program of alumni activity. At the first meeting of the senate at the Quadrangle Club, January 18, Mr. Charlton Beck, executive secretary of the Alumni Association of the University of Chicago, was made an honorary member of the Medical Alumni Association and presented with the first key to be awarded by the group. Officers of the Medical Alumni Association include Drs. Victor Johnson, Secretary of the Council on Medical Education and Hospitals of the American Medical Association and professorial lecturer in physiology at the university, president; Joseph Alfred Rider, now serving an internship at Presbyterian Hospital, vice president; John V. Prohaska, treasurer, and Hilger H. Jenkins, associate professor of surgery at the university, secretary.

INDIANA

Personal.—Frank S. Stafford, M.S., director of the division of health and physical education, Indiana State Board of Health, has been given a leave of absence until July 1, 1945 to go to Washington to head the physical fitness program under the United States commissioner of education, John W. Studebaker. —Dr. Harry P. Ross, president of the Richmond Board of Health, has been appointed a member of the state board of health to fill the unexpired term of the late Dr. Henry C. Metcalf.

New Department of Preventive Medicine.—Dr. Gerald F. Kempf, head of the communicable disease service at the Indianapolis City Hospital, has been appointed superintendent of preventive medicine in the Indianapolis City Board of Health, effective January 1. The position is a new one and is the beginning of an expanded program of public health education. In his new capacity Dr. Kempf will also serve as assistant to Dr. Herman G. Morgan, secretary of the city board of health.

Lectureship Created for Dr. Barnhill.—A lectureship has been established at the Indiana University School of Medicine, Indianapolis, by Phi Delta Upsilon in memory of the late Dr. John Finch Barnhill, for many years connected with the university in the department of otolaryngology and head surgery. A plaque will be hung in the medical school on which will be placed each year the name of the freshman medical student who has done the most outstanding work in anatomy. The name of Maurice A. Turner, Indianapolis, a freshman student of last year, is the first name to be placed on the plaque.

Secretaries' Conference.—The Indiana State Medical Association held its annual Secretaries' Conference at the Claypool Hotel, Indianapolis, January 21. Among the speakers were:

Mary Walsh, educational director, state board of examination and registration of nurses, Indianapolis, The Bolton Law and Its Relationship to the Patient.

Don C. Hawkins, special agent, American Health Insurance Corporation, Chicago, Group Malpractice Insurance and Health and Sickness Insurance.

Dr. John D. Van Nuys, medical director, Indiana University Medical Center, Indianapolis, Children's Bureau Program.

Drs. Norman M. Beatty and J. William Wright, co-chairmen, Committee on Public Policy and Legislation, state medical association, Indianapolis, Legislative Program.

Dr. John H. Fitzgibbon, Portland, Ore., chairman, American Medical Association Council on Medical Service and Public Relations.

Dr. Orley E. Wilson, secretary, Elkhart County Medical Society, Elkhart, How Local Societies are Meeting Present Emergencies.

Lieut. Col. Harold C. Lueth, Surgeon's General Liaison Officer to the American Medical Association, Future Trends in Medical Practice.

Dr. Eldridge M. Shanklin, Hammond, editor, *Journal of the Indiana State Medical Association*.

At the dinner session the speakers were Drs. Nelson K. Forster, Hammond, president, state medical association, and Walter H. Judd, congressman, Minnesota, on "Problems Facing the New Congress and the American People."

MARYLAND

Exhibit of Medical Art.—A collection of the work of the late Max Brödel is the focal point of interest in a display of medical art at the Enoch Pratt Free Library, Baltimore, which opened January 8 and will continue through January 29. The collection was lent by the department of art as applied to medicine, Johns Hopkins University School of Medicine.

Other exhibitors include the daughter of Professor Brödel, Elizabeth Brödel, now with New York Hospital; Tom Jones, head of the department of art, University of Illinois, and Mr. Willard C. Shepard, art editor, W. B. Saunders Company, Philadelphia.

Association of Private Practicing Psychiatrists.—On December 5 the Baltimore Association of Private Practicing Psychiatrists was organized to investigate the problems of private psychiatric practice in the community. Members of a preliminary planning committee are Drs. Wendell S. Muncie, chairman, Horace K. Richardson and Robert V. Seliger. In announcing the creation of the society, which stemmed from the increased work thrown on the practicing psychiatrist, it was stated that a group was needed both to pool thoughts, opinions and feelings relative to dynamics, psychotherapy, mental hygiene, the practical items of hospital and extramural treatment facilities, community education and medical economics, and from this to bring out the second point, constructive results and the development of the foregoing plus consideration and methods of having certain psychiatric patients admitted to general hospitals, and conference meetings with the heads of the city and state full time mental hospital systems. The group is interested in having similar groups and opinions from other cities throughout the country. Those physicians who are interested should communicate with Dr. Muncie, 11 East Chase Street, Baltimore.

MICHIGAN

Personal.—Thomas L. Patterson, Ph.D., since 1941 research professor of physiology, Wayne University College of Medicine, Detroit, recently received the honorary degree of doctor of science from Clark University, Worcester, Mass., in recognition not only of "his contributions through teaching and research but also in his human relationships; eminent for his research work and numerous publications in the field of his chosen science, physiology; a devoted student of the problems pertaining to human health."

Joint Project for Care of Expectant Mothers.—The Wayne County Medical Society and the Detroit Department of Health are cooperating in a program of group discussion and demonstration for the expectant mother. The physician may refer patients to a series of classes in antepartum education including bath demonstration, infant clothing and general child care. Admission to the classes will be by card signed by the attending physician. The discussion will be directed by qualified nurses under the supervision of the medical society, and material for demonstrations will be furnished by the society. The conferences started at the David Whitney House, January 17, and will be held weekly.

Miner Memorial Fund.—A \$10,000 scholarship fund for medical students has been established at Wayne University by Mrs. Marion M. Leahy and Helen I. Miner as a memorial to their father, the late Dr. Stanley G. Miner. Born in Detroit in 1861, Dr. Miner was a graduate of the Wayne University College of Medicine, Detroit, and served on its faculty as professor of otology, laryngology, rhinology and physical diagnosis. He also was a member of the staff of St. Mary's Hospital and was at one time chief of staff for that institution. From 1913 to 1919 he was a member of the Detroit Public Welfare Commission and was actively interested in the establishment of Receiving Hospital. He died June 28, 1942.

MINNESOTA

Journal-Lancet Lecture.—Brig. Gen. James S. Simmons, chief of the division of preventive medicine, Office of the Surgeon General, delivered the fourth annual Journal-Lancet Lecture Dec. 7, 1944 at the University of Minnesota Medical School, Minneapolis. His subject was "Recent Advances in the Control of Insect Borne Diseases."

Proposed Industrial Health and Efficiency Committee.—The University of Minnesota Medical School, Minneapolis, has announced its plan to create an industrial health and efficiency committee to assemble and coordinate the activities of the school in industrial medicine and to devise ways and means of making immediately available to industry discoveries and developments in this field. At a recent meeting at which Dr. Harold S. Diehl, dean of medical sciences at Minnesota, announced plans for the Mayo Memorial (THE JOURNAL, January 13, p. 111), consideration was given to the relationship and value of the memorial to the industries of the state, this point having been discussed at a previous meeting of the committee of founders of the memorial. The creation of the industrial health and efficiency committee was believed the best step in developing a coordinated program at the university

to ensure a comprehensive and well regulated development of research teaching programs and other matters incidental to industrial health and medicine. It was proposed that the committee consist of the heads of the departments of the school of medicine most immediately concerned with the program.

License Suspended.—On Nov. 10, 1944 the Minnesota State Board of Medical Examiners suspended for a period of three years the license to practice medicine formerly held by Dr. Milton C. Wolf, who was associated for many years with the Heidelberg Medical Institute, St. Paul, and which in recent years has been known as the Mid-West Clinic. Dr. Wolf's license was suspended following a complaint that he had obtained \$74 in advance from a 26 year old male patient who had gone to Dr. Wolf complaining of pain in the lower part of his back. The patient testified at a hearing before the Minnesota State Board of Medical Examiners that he was questioned at length by an unlicensed associate of Dr. Wolf's in reference to sexual matters and lost manhood, notwithstanding the fact that the patient stated that he had been employed for four and one-half years in a foundry and had injured his back. The patient further testified that he was advised that the usual charge was \$150 as a down payment and \$5 per week for treatments but that in his case the charge would be only \$100 plus the charge for weekly treatments, and a guaranty "that he would be a man again." During the investigation by Mr. Brist on behalf of the Minnesota State Board of Medical Examiners, the money was returned to the patient. Dr. Wolf was born in Chicago in 1876 and graduated at the College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, in 1898. He was licensed in Minnesota in 1905 by examination. Dr. Wolf previously had been warned by the state board of medical examiners with respect to his practice at the Heidelberg Institute and the Mid-West Clinic.

NEBRASKA

Ninety-Six Years of Age.—Dr. James K. Newman, Omaha, observed his ninety-sixth birthday, January 5. Dr. Newman graduated at the Universidad Nacional Facultad de Medicina, Mexico, D. F., in 1879.

Dr. Joslin Gives Alpha Omega Alpha Lecture.—Dr. Elliott P. Joslin, professor emeritus of clinical medicine, Harvard Medical School, Boston, delivered the annual address before the Alpha Omega Alpha chapter of the University of Nebraska College of Medicine, Omaha, January 18, on "Diabetes Today."

NEW JERSEY

Hospital Restricts Employment of Private Nurses.—To help increase the supply of nurses available for military service, the board of managers of St. Elizabeth Hospital, Elizabeth, on January 3 restricted the employment of private nurses. In a statement to the press it was stated that the hospital would not assign any nurses under 45 years of age to private duty unless they were mothers of children under 14 or had been found unfit for military service.

NEW YORK

Graduate Lecture.—Dr. William Goldring, associate professor of medicine, New York University College of Medicine, will address the Nassau County Medical Society, Rockville Centre, February 27, on "Hypertension and Hypertensive Heart Disease."

Forum on Rabies.—To give the public a truer knowledge of the nature of rabies and its common methods of transmission and possible means of control, the Westchester County Medical Society held a forum on rabies January 17 at the County Center in White Plains. The speakers were Dr. James E. Perkins, Albany, director, division of communicable diseases, state department of health, and James E. Assing, formerly veterinarian for the New York City Health Department, engaged in rabies control and eradication.

Secretaries Named for State Society.—Dr. Walter P. Anderton, a practicing physician in New York since 1913 and assistant professor of clinical medicine at Columbia University College of Physicians and Surgeons, was appointed secretary of the Medical Society of the State of New York at a meeting of the society's council, January 11. He succeeds the late Dr. Peter Irving. Dr. Anderton graduated at Columbia in 1911. He received his license to practice in New York in 1913. Dr. Robert Roger Hannon, formerly assistant professor of medicine, Albany Medical College, and secretary of the state board of medical examiners, Department of Education, Albany, has been named executive officer of the Medical

OREGON

Personal—Dr Wilmot C Foster, Portland has been appointed by the governor as a member of the state board of medical examiners to fill the vacancy that occurred with the death of Dr Harold L Blosser

Noble Wiley Jones Honored—On December 14 the Portland Academy of Medicine, at its annual dinner meeting at the Heathman Hotel, honored Dr Noble Wiley Jones, who has practiced in Portland since 1907, for his years of service to the academy. Dr Laurence Selling, professor of medicine and neurology, discussed his contribution to scientific medicine. Dr Homer P Rush, associate clinical professor of medicine to the practice of medicine, and Olof Larsell, ScD, professor of anatomy, to medical education. All are members of the faculty of the University of Oregon Medical School, Portland. Dr Jones is a member of the committee appointed to form the Medical Research Foundation sponsored by the Portland Academy of Medicine and designed to aid medical research in the vicinity and a member of the library committee of the academy and of the medical school. He has served as secretary and president of the Portland Academy of Medicine.

TEXAS

Physician Honored with Gift for New Hospital.—A charter and war bonds to use as payment for the erection of the first wing of a hospital in Grand Saline was given to Dr V Bascom Cozby at a meeting of the local Lions Club recently. Mr E B Germany, oil operator in Dallas and a native of Grand Saline, is the donor of the gift. When completed the hospital will be known as the Cozby-Germany Hospital.

University News.—The National Live Stock and Meat Board of Chicago has donated \$7,200 to the University of Texas Medical Branch, Galveston, for the support of work in fat metabolism under the direction of Dr Arild E Hansen, professor of pediatrics and director of the child health program. The work of the child health program is supported by the William Buchanan Foundation of Texarkana. A grant of \$1,800 has been made by the Abbott Laboratories of Chicago to the department of internal medicine at the medical school to support research work of Dr Charles T Stone, professor of internal medicine.

UTAH

Changes in the Faculty.—Dr A Cyril Callister, dean of the University of Utah School of Medicine, Salt Lake City 1, has announced the following changes in the faculty.

Dr Francis D Gunn, formerly associate professor of pathology at Northwestern University Medical School, Chicago, appointed professor and head of the department of pathology (THE JOURNAL, Aug 26, 1944, p 1201).

Dr Hans Hecht, formerly instructor in medicine, Wayne University College of Medicine, Detroit, appointed instructor in medicine.

Dr Louis S Goodman, professor of pharmacology at University of Vermont College of Medicine, Burlington, appointed professor of pharmacology and chairman of the department of pharmacology and physiology.

James E P Tourin, PhD, instructor in pharmacology and physiology at the University of Vermont College of Medicine, appointed assistant professor of physiology.

Corrine Manuel, PS, MT, appointed research assistant in the department of pharmacology.

Abbott Laboratories, North Chicago, Ill, has made an additional grant of \$1,500 to Dr Goodman for the study of new anticonvulsants and analgesic compounds. The Gravidan-Delawanna, Inc, New York, has made a grant of \$16,000 to Dr Goodman to be expended over a period of two years for the purpose of investigating a large series of new organic compounds for their pharmacodynamic properties and therapeutic actions.

WASHINGTON

Hospital News.—A \$350,000 addition is being constructed at St Elizabeth's Hospital, Yakima. The addition is four stories high with a bed capacity of 50 and will contain, among other things, an isolation department, physical therapy rooms and a psychiatric ward.—Dr Stanton A McCool Jr, newly appointed health officer of Elma, has purchased the Elma General Hospital.

Portrait of Dr. Ward.—Ceremonies were held recently to unveil the portrait of Dr Charles Byron Ward and to mark its presentation to the King County Medical Society. In making the presentation Dr Homer D Dudley, Seattle, reviewed the career of the late Dr. Ward, to whom goes the credit for the development of the King County Society Library which, while established in 1898, took on new status in 1931 when Dr Ward arrived in Seattle and became interested in it. Until 1936 the library had been supported by

Society of the State of New York, with offices in Albany. He fills the vacancy that occurred when Dr Joseph S Lawrence joined the staff of the American Medical Association, with offices in Washington, D C. Dr Hannon graduated at Johns Hopkins University School of Medicine, Baltimore, in 1919 and subsequently has served on the staffs of Johns Hopkins, Cornell University Medical College, University of Rochester School of Medicine and Dentistry and the Peiping Union Medical College, Peking, China.

New York City

Dr. Bristol Resigns as Executive Director of Hospital Council.—Dr Leverett D Bristol has resigned as executive director of the Hospital Council of Greater New York because of ill health. Prior to his appointment to this position (THE JOURNAL, Nov 27, 1943, p 850) Dr Bristol served as health director of the American Telephone and Telegraph Company. Dr Bristol is a member of the Council on Industrial Health of the American Medical Association.

Personal.—A silver vase was presented at a dinner to Dr Howard W Neill, Jamaica, who retired recently after thirty-five years as a medical examiner in Queens County. The presentation was made by Dr L Howard Moss, Richmond Hill, member of the medical board and of the board of trustees of Jamaica Hospital, where Dr Neill had worked since his internship in 1909. He was chief of the hospital's department of gynecology and was recently retired with the title gynecologist emeritus.—Dr Robert C Darling has been appointed associate professor of medicine at Columbia University College of Physicians and Surgeons.

The Future of the American Family.—A symposium on "The Future of the American Family" was held at the Waldorf-Astoria Hotel, New York, January 23 (THE JOURNAL, January 20, p 175) under the auspices of the American Education Fellowship, Child Study Association of America, Editors of the Survey Publications, National Child Labor Committee, National Committee for Mental Hygiene, National Committee on Housing, National Council of Negro Women, National Council for Parent Education and the Planned Parenthood Federation of America. The major federal agencies concerned with the family and other national voluntary agencies cooperated in providing discussion material for the symposium program.

Eye Examinations Start Union Health Plan.—With \$2,924,000 collected since May, a health and vacation fund for 80,000 dressmakers in New York and vicinity began operation January 3 with an eye examination given to 150 employees of the Apex Dress Company by physicians and assistants from the union health center. All workers will receive examinations in the 2,215 shops of the industry. Workers with defective vision will be referred to the health center for further medical treatment, and corrective treatment and eyeglasses will be furnished free of charge. The eye program will be a part of the health conservation and sickness benefit plan established under the health fund. The New York Times reports that hospitalization, medical service, illness disability benefits and aid to workers suffering from tuberculosis are to be developed. With the health program will be combined free vacations with payments of \$23 to \$38 to cover a week away from work. The fund was created eight months ago in the collective agreement between the dressmakers union and the four employer associations in the industry.

OHIO

State Meeting Canceled.—The Ohio State Medical Association announced on January 16 that the ninety ninth annual meeting of the Ohio State Medical Association, which had been scheduled to be held in Columbus, May 1-3, has been canceled.

Radio Series on Health.—The Cleveland Health Museum, in cooperation with the Cleveland Dental Society, the Academy of Medicine of Cleveland and the Cleveland Mental Hygiene Association, began a new series of radio lectures over Station WGAR, December 12, with a talk by Dr Henry C Schumacher, director of the Cleveland Guidance Clinic, on "Your Mind and You." Others in the series include:

Clyde O Fritz, DDS, and class, Western Reserve University, Triumph Over Pain, December 19.

Mrs James D Polley, Family Health Association, The Parent and the Happy Child, December 26.

Dr James J Sloves, Vitamins: Their Use and Abuse, January 2.

Bertha M Luckey, PhD, board of education, Guiding Teen Age Youth in Home and School, January 9.

Dr Frank F Tallman, commissioner of mental diseases, Columbus, Better Mental Health for Ohio Citizens, January 16.

Dr Richard E Stout, Worry and Nervous Tension, January 23.

Dr Joseph L Feltman, What the Community Can Do to Aid Returning Servicemen, January 30.

Francis A Arnold, DDS, U S Public Health Service, Tooth Decay Can Be Controlled, February 6.

private subscription, and Dr. Ward is credited with the adoption of a by-law by the county medical society assessing each of its members \$10 a year for its support. Dr. James E. Hunter, Seattle, accepted the portrait, the work of Mr. Neale Ordayne, which will hang in the library, on behalf of the medical society.

WEST VIRGINIA

Changes in Health Personnel.—Dr. Elias W. Langs, U. S. Public Health Service Reserve, former district health officer for Norfolk and Princess Anne counties, Va., has been appointed acting director of the division of communicable diseases, state health department, to succeed Dr. Albert M. Price, Charleston, resigned. Dr. James T. Duncan, director of the bureau of tuberculosis, has been serving as acting director of the division of communicable diseases since September 1944.—Dr. Martin B. Woodward, director of the division of vital statistics, state health department, has resigned and is now on the staff at the Washoe County General Hospital, Reno, Nev. No successor has yet been appointed.

GENERAL

O. M. Goodloe Joins American Red Cross.—Dr. Ollie M. Goodloe, Lexington, Ky., formerly assistant director, bureau of county health work, for the Kentucky State Department of Health and recently deputy director of the Peoria Health Department, Peoria, Ill., has been appointed medical director of the eastern area of the American Red Cross.

Examinations for Technicians.—The American Orthoptic Council announces that its next examination will be held in September and October. The written examinations will be held at various cities in the country on Friday, September 7. Only those passing the written examinations will be permitted to take the oral and practical tests, to be given in Chicago on Saturday, October 6. Applications on official forms must be received before July 1. Address the American Orthoptic Council, 23 East 79th Street, New York 21.

The American Woman and the American Home of Tomorrow.—The Woman's Foundation has announced a conference to be held at the Westchester Country Club in Rye, N. Y., March 1-5, the theme of which will be "The American Woman and the American Home of Tomorrow." The foundation was granted a charter under the laws of Missouri, March 6, 1942 as a nonprofit organization, sponsored by the board of Stephens College, Columbia, Mo., and under the direction of a board of trustees. Under the provisions of its charter the foundation will engage in "the study of problems of the American home and of the American woman who must, in the home, face and deal with those problems of a practical, educational, cultural, moral and religious nature which vitally affect the health, efficiency, character and citizenship of the American people."

One Hundred Years of Pharmacy.—Sharp & Dohme, Inc., Philadelphia, is this year observing its one hundredth anniversary. The growth of the firm stemmed from a drugstore at Pratt and Howard streets, Baltimore, opened in 1845 by Alphus Phineas Sharp, Winchester, Va., who three years earlier was the first graduate of the Maryland College of Pharmacy. In 1852 Mr. Sharp employed an apprentice, Louis Dohme, who did odd jobs around the store and in between times attended the Maryland College of Pharmacy, where he graduated in 1857. In 1860 he was made a partner, and the firm name was changed to Sharp & Dohme. A younger brother of Louis Dohme, Charles, who graduated at the Maryland College of Pharmacy in 1862, later joined the firm, and his son, Alfred R. L. Dohme, Ph.D., Baltimore, later became head of the company and is still a director.

Schering Awards to Medical Students.—Announcement of winners in the Schering award competition, open to undergraduate medical students in the United States and Canada, has been made by the committee of judges. Choosing from a large number of manuscripts on the subject "Hormones and Cancer," the committee has made the following awards:

First Prize, \$500, Maurice L. Silver, class of 1945, Loyola University School of Medicine, Chicago.

Second Prize, \$300, Sidney L. Kafka, class of February 1945, Middlesex University School of Medicine, Waltham, Mass.

Third Prize, tie, duplicate awards of \$200 each to Roslyn Wiener, class of 1945, University of Michigan Medical School, Ann Arbor, and Norman B. Hirt, class of 1945, Queen's University Faculty of Medicine, Kingston, Ont.

The Schering award competition has been offered annually by the Schering Corporation for the purpose of stimulating a current interest in endocrinology among undergraduate medical students. It is sponsored and administered by a special committee of the Association of Interns and Medical Students.

Nutrition Grants.—Grants of \$127,750 for research projects in nutrition were approved at the recent annual meeting of the board of trustees of the Nutrition Foundation in Minneapolis. Since its organization by food and related manufacturers in 1942 the foundation has made appropriations of \$654,700 to support ninety-five separate research projects in American universities. Total contributions of \$1,524,500 have been made to carry on the work of the nutrition foundation by fifty food and related manufacturers. Fourteen of the recently approved grants are for the extension of studies that have already been started by the foundation and have yielded results that have made it seem wise to extend the work from two to three years. New grants included one to Harvard University, Cambridge, Mass., for research in community nutrition, one of a series of similar studies to be initiated in different parts of the country to obtain information correlating nutrition and health. Other new grants are:

University of Chicago, Chicago, the iron requirement of the adolescent girl.

University of Southern California, Los Angeles, the intermediary metabolism of carotene.

Duke University, Durham, N. C., nature of the ascending paralysis produced in dogs on a B complex deficient diet and responding to biotin therapy.

Meharry Medical College, Nashville, Tenn., studies on pantothenic acid.

FOREIGN

Society News.—Dr. Andrew Fergus Hewat was reelected president of the Royal College of Physicians of Edinburgh recently. Drs. Lewis H. F. Thatcher, Alexander Ninian Bruce, David M. Lyon, William D. D. Small, William A. Alexander and David K. Henderson were elected to form the council for the ensuing year, and Dr. Lyon was nominated vice president.

American Scientists Aid Egyptians.—Dr. Maurice L. Tainter, director of research, and Chester M. Suter, Ph.D., director of chemical research of the Winthrop Chemical Company, Inc., Rensselaer, N. Y., and New York City, have arrived in Cairo to assist in new research on tropical diseases on invitation of the Egyptian government. The two American scientists will spend several months abroad investigating malaria, schistosomiasis, and a liver infestation and trachoma. As official guests of the Egyptian government, Drs. Tainter and Suter will join Egyptian scientists and medical men in collaborative efforts looking toward the development of clinical and laboratory facilities for a systematic and long range study of tropical diseases. Dr. Tainter has been associated with Winthrop since May 1943, having previously been professor of pharmacology, Stanford University School of Medicine, San Francisco. Prior to his association with Winthrop in October 1942 Dr. Suter was professor of organic chemistry at Northwestern University, Evanston, Ill., and chairman of its department of chemistry.

Artificial Tropical Climate Aids Rheumatic Fever.—About 20 patients have been treated with good results in a special "tropical ward" at the University Hospital of Lund in South Sweden. The ward is known as the climatological laboratory and was established about three years ago at the suggestion of Dr. Gunnar O. Edström. It has double walls and quadruple windows, and all visitors must pass some time in a "sluice" so as not to carry cold and humid air into the ward. The temperature is constantly at 32 C. (89.6 F.) and the relative moisture is not permitted to rise above 50 per cent, while the average figure is 35 per cent. The climate thus produced corresponds to that of Puerto Rico, although it is slightly hotter and drier. The complicated equipment required to keep the climate at a constant level has been donated by the Swedish air conditioning specialists A/B Svenska Fläktfabriken, Stockholm. The patients of Dr. Edström spend about three months in the ward. Sometimes their state improves very rapidly, but in other cases it takes weeks before any real recovery is perceptible. As there are only 2 beds in the ward, the number of patients that can be treated is necessarily small. Dr. Edström hopes, however, that in the future entire hospitals will be constructed for this treatment.

Deaths in Other Countries

Dr. Henry Briggs, for twenty-three years professor of midwifery and gynecology, University of Liverpool, and emeritus professor from 1921, died Nov. 22, 1944, at Hoylake, aged 88.

Sir Joseph Arthur Arkwright, associated with the Lister Institute since 1905 and a member of the Royal Society, died Nov. 22, 1944.—**Dr. Bernard Cuneo**, prominent surgeon, died in Paris Dec. 11, 1944, aged 71.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 23, 1944.

No Increase of Mental Breakdown Due to War

In spite of the bombing of this country from the air with considerable destruction of property and loss of life in the five years of war, there is no evidence of any increase in serious cases of mental breakdown. This summary of the effect of the war on mental health is given in the thirtieth annual report of the Board of Control, the official body which controls mental hospitals. The board points out that although admissions to mental hospitals do not by themselves give a complete picture of the incidence of psychoses and neuropsychoses they do indicate the general trend. Even in blitz areas, the report states, "there are relatively few cases in which the mental breakdown can be attributed in any degree to the effects of war and more particularly of air raids. In those cases in which the breakdown appears to have been caused or accelerated by air raids it is generally found that the past history of the patients suggests that they might have developed mental trouble in any event, though possibly at a later date." The board mentions that a neurosis survey recently carried out by the Ministry of Health did not show any alarming increase in neuroses, particularly when allowance is made for the fact that the war has forced into industry, often in unfamiliar and trying conditions, many who previously led sheltered lives and whose breakdown under the unaccustomed strain might have been regarded as inevitable. "Looking at the situation as a whole," says the board, "we feel that it may fairly be claimed that the war has demonstrated the mental stability of the nation." At the end of 1943 the number of persons suffering from mental disorder reported under care in England and Wales was 147,557 (63,054 men and 84,503 women), a slight decrease from the year before.

Psychotherapy in Social Clubs for Patients

A remarkable new development in psychotherapy has taken place recently. It is a form of rehabilitation that is being used for patients in mental hospitals and outpatients attending psychiatric clinics. This is the institution of self-governed social clubs as part of a bigger scheme of group psychotherapy. E. B. Strauss of the department of psychologic medicine at St. Bartholomew's Hospital, Rolf Ström-Olsen of the Russell Hospital and J. Biercr of the Military Psychiatric Hospital state (*Brit. M. J.* 2:861, 1944) that the clubs have been tried for the past four years at Runwell Hospital and for two years in connection with the outpatient departments of St. Bartholomew's and Guy's hospitals and have given encouraging results. Some patients are placed in mental hospitals because they are a danger to themselves or to society. The longer they stay the less normal their lives become, it is pointed out, and this may make them worse. The social club is a successful way of breaking, or even preventing, this vicious circle. It is a successful antidote to the stigma that tells so heavily against the patient both before and after discharge from a mental hospital. It helps remove the dividing line between him and normal persons and gives him a chance to use initiative and shoulder responsibility. The number of patients who find it difficult to adapt themselves socially is overwhelming. The social club has proved to be one of the easiest ways to overcome this difficulty, the authors declare. The symptoms so far combated through the clubs are shyness and loneliness, general and social inferiority feelings, sexual maladjustment, lack of incentive and aim in life, inability to cooperate with others, anxiety and phobias, parental domination, acute disappointment and psychologic effects of physical defects.

Under war conditions the clubs meet once a week. They are run on democratic lines, a new committee being elected every three months. The chief officers are the chairman, vice chairman, secretary and organizers for games, sports, refreshments, intellectual pursuits and other activities. The officers are elected for this short term so that as many people as possible may be given responsibility. The programs consist of lectures, debates and entertainments such as games, sports, dancing lessons and dancing, whist drives, parlor games and community singing. The doctor and his assistants attend the meetings as ordinary members, but it is important that they should work behind the scenes. The social clubs are not a form of entertainment, it is emphasized, but are part of a scheme of therapy.

The United Nations Relief and Rehabilitation Administration

The European regional office of UNRRA has recruited a number of experts in public health for its work in the liberated countries of Europe and has held meetings with physicians from these countries to discuss their needs. An epidemiologic bureau has been set up, to which all countries will send information about epidemics and from which information will be distributed to all those who should be informed. An emergency unit with drugs and surgical equipment to meet the requirements of 100,000 people for one month has been formed. The unit also includes one hospital of 200 beds with an operating theater and five 40 bed hospitals. A special department will deal with displaced persons, of whom there are several millions, who want to get back to their own countries as soon as possible. UNRRA has a great responsibility with regard to the supply and distribution of food to the devastated regions. In countries in which the condition is serious they propose to have at least one nutritionist to investigate; he will have a team containing a dietitian and a biochemist.

In London Dr. Andrew Topping has assumed office as director of the health division of the European regional office. Dr. Wilbur A. Sawycr, director of health at the UNRRA headquarters in Washington, arrived in London in June to be nearer the center of operations. In London four medical officers have been appointed (two British, one French and one Dutch) in addition to two deputy directors, Dr. N. M. Goodman, British, and Dr. D. A. Reekie, American. In all the health work of UNRRA the overriding principle is to reestablish national and local health and medical services so that they can deal with their own problems at the earliest possible moment, but help will be provided in the period of transition.

Child Immigration into Australia

Australia has the same concern as European nations about her future population and has expressed a desire for more immigration, which, in any numbers, seems rather hopeless under present conditions. She has now planned child immigration. The cabinet has approved a plan to bring in an average of 17,000 children annually in age groups of 6 to 12 years for aliens and 6 to 14 for British children. Because of legal difficulties it is not proposed to plan for the introduction of child migrants by private adoption, but this will not prejudice adoption in approved cases. It is proposed to arrange with bodies such as UNRRA and the British and other governments to select suitable orphans and other children. The proposal is part of a larger immigration scheme, which the Australian high commissioner in London is discussing with the British and other governments, to bring acceptable adult immigrants from all available sources after the war. The Australian government is not in favor of the proposal to establish large groups of foreign nationals at any one place. In the sugar growing country on the north coast of Queensland, for example, there is an Italian colony which has its own schools and prints its own newspapers. This

experience has shown the undesirability of foreign settlements which do not mix with the Australian community. Australia will welcome people of all nationalities but wants them to learn English and become assimilated as quickly as possible.

The Expenditure on Nostrums

At the representative meeting of the British Medical Association Dr. J. Phillips moved a resolution which was unanimously agreed to: that the education of the public on the meretricious claims of "patent" foods, drinks and medicines should be intensified immediately. He said that \$100,000,000 a year was spent on various nostrums. Thus when government control of the use of paper has reduced the advertising pages of medical journals and at the same time greatly increased the cost of advertising space, book advertisements cease while nostrum advertisements flourish, Dr. Phillips pointed out.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, Dec. 5, 1944.

Diabetes in Brazilian Cities

Dr. Fabio C. Nunes has recently studied the incidence of diabetes in eighteen of the largest cities of Brazil, particularly Rio de Janeiro. As statistics are scarce and incomplete, Dr. Nunes's paper deals primarily with deaths from the disease. In the Brazilian cities diabetes is rated as a disease of relatively little importance in comparison with tuberculosis, with syphilis, and with the diseases of the digestive system as far as the total number of deaths is considered. Study of the mortality returns of those cities for the years 1934 to 1942 show that, for the whole nine year period, diabetes has been the cause of 0.47 per cent of all deaths, the percentage having a statistically significant increase for the three periods 1934-1936, 1937-1939 and 1940-1942: 0.36, 0.44 and 0.58 respectively. For the city of Rio de Janeiro this corresponds to 455, 623 and 656 deaths from diabetes in the three periods. For all eighteen cities, aggregating at the present time a population of 5,600,000, or about 13 per cent of the population of Brazil, these figures correspond to annual death rates of 6.6, 8.0 and 9.7 per hundred thousand of population for each of the three periods included in the study. Shown in this form, the prevalence of the disease also has a significant increasing trend, as the average annual death rate for the eighteen cities is 8.8 per hundred thousand of population for the whole period included in the study. Only the cities of Porto Alegre, São Paulo and Rio de Janeiro show, for the nine years as a whole, an average death rate from diabetes of 10 or more per hundred thousand of population (10.0, 11.2 and 13.6 respectively). For the sake of comparison it should be pointed out that the annual death rate from diabetes in the large cities of the United States is at the present time about 25 or 30 per hundred thousand of population.

For the city of Rio de Janeiro in particular, for which the statistical data are more complete, Dr. Nunes's paper shows that the deaths from diabetes for the years 1934 to 1942 represented 0.67 per cent of the total of deaths from all causes. For the years 1942 and 1943 the annual death rate was 12.0 and 12.5 per hundred thousand of population. During the last decade the annual number of deaths from diabetes has increased 45.1 per cent in Rio de Janeiro, an average annual increase of 4.5 per cent. In this city for the whole period 1932-1942, 42.5 per cent of the deaths from diabetes have been in males as against 57.5 per cent in females. But it is interesting to point out that the female percentage rises as the age increases: below 40 years female deaths from diabetes represent 40.7 per cent of the total, in the age group 40-59 years 55.5 per cent, in the age group 60-79 years 61.2 per cent and in the age group 80 years and

over 72.1 per cent. Only 8.3 per cent of all deaths from diabetes occur to those under 40, as against 41.4 per cent in the age group 40-59 and 50.3 per cent in the age group 60 years and over. The racial distribution of deaths from diabetes in Rio de Janeiro for the twelve years 1932 to 1943 has been 86.4 per cent for white people and 13.6 per cent for colored.

The Misericordia Hospital

The Misericordia Hospital of Rio de Janeiro is the oldest institution of its kind in Brazil. In 1582, eighty-two years after the discovery of Brazil by the Portuguese admiral Pedro Alvares Cabral, an armada of sixteen ships and 3,000 men, commanded by Baldez, arrived at the port after having been heavily battered for several days by stormy seas. As many members of the crews were wounded and sick, father Anchieta, the great Jesuit to whom Brazil owes so much for his pioneer work in the fields of charity and education, received the men in a large house where they found shelter and treatment. This was the beginning of a hospital that was named after Our Lady of Mercy (Nossa Senhora da Misericordia). Up to 1840 the Misericordia Hospital was a large, private infirmary, old, dark and in part underground. Since then it has been remodeled and enlarged several times, the newest improvements having been completed last year.

The present institution is a private hospital, largely for free patients, which consists of thirty-one wards, with more than 900 beds, and 43 outpatient clinics for all the medical and surgical specialties of present practice. During the year 1943, 8,512 patients were interned in the wards of the Misericordia Hospital, and a total of 123,754 individual visits were registered at the outpatient clinics, where 55,022 dressings were done, 88,625 injections were applied and 1,631 minor operations were performed. For the wards and the clinics the pharmacy furnished 281,308 prescriptions. A great improvement, started two years ago, was the creation of a laboratory for the preparation of parenteral products; the laboratory manufactured 441,776 ampules during the year 1943, resulting in a great saving of money to the institution. The Institute of Physical Therapy is now operating powerful equipment for high voltage roentgen therapy and is using about 50 cg. of radium. One important new feature of the hospital is its center of postgraduate teaching, which has just begun another course on the subject of arterial hypertension under the direction of Dr. Genival Londres, professor of medicine at the Rio de Janeiro School of Medical Sciences. The superintendent of the Misericordia Hospital is Dr. Ary A. Silva and the medical director is Dr. Paulo Cesar de Andrade.

Marriages

LUCIANO E. DE MARCO, Newark, N. J., to Miss Clare Magdalene Enzbremer of Altoona, Pa., in South Orange, N. J., November 5.

GEORGE A. MICHELSON, San Francisco, to Miss Helen L. Ashford of Charlotte, N. C., at York, S. C., November 11.

JOHN WARREN MANNING 3d, Philadelphia, to Miss Muriel Elizabeth Johnson at Lakewood, N. J., October 15.

KEVIN MICHAEL COSGROVE, St. Johnsbury, Vt., to Miss Joan McGrath of Bronxville, N. Y., December 9.

NICHOLAS AYLWARD KNOX, Woodhaven, N. Y., to Miss Irene Vaughan in Brooklyn, October 21.

CORNELIUS E. GORMAN, Lynchburg, Va., to Miss Elizabeth Skender of Canton, Ill., October 17.

TOM R. ROBERTS, Crowell, Texas, to Miss Laura Mac Hunter in Dallas, November 4.

THOMAS J. NAUGHTON to Miss Elizabeth Roughan McMahon, both of Chicago, November 27.

CHARLES A. BECK to Miss Ruth Brandstetter, both of Chicago, December 10.

Deaths

Lloyd Hiram Ziegler • Wauwatosa, Wis.; University of Minnesota Medical School, Minneapolis, 1921; assistant in psychology at Indiana University from 1914 to 1917; an intern at St. Elizabeths Hospital, Washington, D. C., for the year 1920-1921, when he also was assistant in clinical psychiatry at George Washington University; an officer in the United States Public Health Service Reserve from 1921 to 1923; reconstruction officer and assistant clinical director, Government Hospital number 37, Waukesha, Wis., and assistant in psychiatry at the Henry Phipps Psychiatric Clinic, Johns Hopkins Hospital, Baltimore, in 1923 and 1924; a fellow in medicine at the Mayo Foundation for the year ended in 1925, when he left to become associate professor in neuropsychiatry at the University of Colorado School of Medicine, Denver, and resident psychiatrist at the Colorado Psychopathic Hospital; became an associate in neurology at the Mayo Clinic in May 1926 and instructor in neurology at the Mayo Foundation, Aug. 17, 1928; became professor of neurology and psychiatry at the Albany Medical College and neurologist and psychiatrist in chief for the Albany Hospital, Albany, N. Y., in 1930; a founder member and member of the board of directors of the American Board of Psychiatry and Neurology, Inc.; member of the American Neurological Association, American Psychiatric Association, Association for Research in Nervous and Mental Diseases, Minnesota Society of Neurology and Psychiatry, Albany County Mental Hygiene Association, New York Psychiatric Society, the Alumni Association of the Mayo Foundation, American Association for the Advancement of Science and the Central Neuropsychiatric Association; in 1931 attended the first International Neurological Congress in Berne, Switzerland, and in 1935 the second congress, which convened in London; lecturer in psychiatry at the University of Illinois College of Medicine, Chicago; in November 1937 became associate director and in April 1942 medical director of the Milwaukee Sanitarium, Wauwatosa; instrumental in organizing the Veterans' rehabilitation clinic in Milwaukee; collapsed and died on the grounds of the Milwaukee Sanitarium January 8, aged 52, of a coronary attack.

William Francis Wild • Jackson Heights, N. Y.; Medical Department of Tulane University of Louisiana, New Orleans, 1906; district health officer, department of health, Williamsburg-Greenpoint Health Center; life member of the American Public Health Association; served as president of the Connecticut Public Health Association and as executive secretary of the Minnesota Public Health Association; at one time served with the American Society for the Control of Cancer and the American Child Health Association; formerly health officer of Bridgeport, Conn., the city of Norfolk, Va., and the counties of Nansemond and Isle of Wight; formerly associated with the Nebraska State Board of Health in Lincoln; died in the Beth Moses Hospital, Brooklyn, November 13, aged 62, of pneumococcic meningitis.

Frank Leander Morse, Somerville, Mass.; Harvard Medical School, Boston, 1894; member of the American Medical Association; medical and sanitary inspector of the Massachusetts Board of Health from 1898 to 1905 and a district health officer from 1909 to 1915; from 1901 until his retirement in 1942 medical inspector for the Somerville Board of Health; formerly in charge of the Somerville Contagious Disease Hospital; discharged from active service in the U. S. Army in 1919 with the rank of lieutenant colonel and was retired from the Officers Reserve Corps in 1935 with the rank of colonel; served on the staffs of the Boston City Hospital and the Somerville Hospital, where he died November 5, aged 73, of carcinoma of the prostate.

Archie Clifford Van Cleve • Portland, Ore.; University of Oregon Medical School, Portland, 1913; also a pharmacist; served during World War I; colonel, medical reserve corps, U. S. Army, not on active duty; formerly member of the state board of health; division surgeon of Associated Oil Company and Texas Oil Company; chief surgeon of Portland Gas and Coke Company; surgeon for Postal Telegraph Company and Mackay Radio; served for eleven years as assistant surgeon to the Union Pacific Railroad Company; for ten years member of the boxing commission of Portland; interned at and member of the staff of St. Vincent's Hospital; on the staff of the Providence Hospital; died November 10, aged 59, of coronary sclerosis.

Thomas Maze Aderhold • El Reno, Okla.; Northwestern University Medical School, Chicago, 1901; an Affiliate Fellow of the American Medical Association; fellow of the American College of Surgeons; served for eighteen months as an Ameri-

can Red Cross doctor in the Boer War in South Africa; at one time surgeon at the Zeigler Hospital, Zeigler, Ill.; for many years surgeon and formerly owner of the El Reno Sanitarium; charter member and past president of the El Reno Lions Club and past president of the chamber of commerce; died in a Dallas hospital September 6, aged 72, of myocarditis and arteriosclerosis.

Clyde Lipsey McNeil • Rogers, Ark.; Vanderbilt University School of Medicine, Nashville, Tenn., 1917; fellow of the American College of Surgeons; councilor of the Tenth District of the Arkansas Medical Society; interned at the Vassar Brothers Hospital in Poughkeepsie, N. Y.; served in the medical corps of the U. S. Army during World War I; a member of the board of directors of the chamber of commerce and of the First Federal Savings and Loan Association; a charter member and past president of the Rogers Kiwanis Club; died November 24, aged 52.

Hughes Dayton • Irvington, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1898; formerly instructor in physical diagnosis at the Cornell University Medical College, New York, and associate attending physician at the New York Hospital and the Hudson River State Hospital, New York; on the staff as consulting physician at the Grasslands Hospital, Valhalla, United Hospital, Port Chester, and the Tarrytown Hospital, Tarrytown, where he died December 3, aged 71, of cerebral hemorrhage due to hypertensive cardiovascular disease.

Ignatz Leo Naseher, Staten Island, N. Y.; University of the City of New York Medical Department, New York, 1885; for nearly twenty years served with the Departments of Public Welfare and Hospitals in the City of New York, serving as chief physician of the latter; formerly special lecturer on geriatrics, Fordham University School of Medicine, and chief of clinic department of internal medicine, Mount Sinai Hospital Dispensary, New York; author of "Geriatrics, the Diseases of Old Age and Their Treatment"; died December 25, aged 81, of anginal syndrome.

Robert Martin Akers, Kermit, W. Va.; Lincoln Memorial University Medical Department, Knoxville, Tenn., 1910; twice elected mayor of Kermit; surgeon for the Norfolk and Western Railway for many years; died in Huntington, W. Va., November 24, aged 60, of myocarditis.

Fred Delmar Andrew, Rochester, N. Y.; College of Physicians and Surgeons, New York, 1887; specialist certified by the American Board of Radiology, Inc.; member of the American Medical Association and the American College of Radiology; roentgenologist at the Monro County Hospital; honorary staff member, Strong Memorial Hospital, where he died December 11, aged 88, of pneumonia.

Scott Carter Applewhite • San Antonio, Texas; Jefferson Medical College of Philadelphia, 1901; on the staffs of the Santa Rosa, Nix, Medical Arts and Medical and Surgical Memorial hospitals; served during World War I; died November 17, aged 68, of acute arteriosclerosis.

Edward S. Beek, Owego, N. Y.; University of Buffalo School of Medicine, 1888; member of the American Medical Association; formerly a pharmacist; past president of the Tioga County Medical Society; served as county coroner for many years; died in the Robert Packer Hospital, Sayre, Pa., November 13, aged 82, of chronic myocarditis (arteriosclerotic).

Alvin Marion Belcher, Auburn, Ky.; University of Tennessee Medical Department, Nashville, 1900; Hospital College of Medicine, Louisville, 1901; died November 19, aged 71, of injuries received in an automobile accident.

Frank Moxon Beresford, Ardmore, Pa.; Marquette University School of Medicine, Milwaukee, 1919; specialist certified by the American Board of Otolaryngology; formerly medical director of the Provident Mutual Life Insurance Company, Philadelphia; served during World War I; at one time lieutenant in the medical corps, U. S. Navy; member of the American Medical Association; died in Spring City October 25, aged 54, of coronary thrombosis.

George W. Booker, Knoxville, Tenn.; Tennessee Medical College, 1901; member of the American Medical Association; for two terms Knox County physician; died November 17, aged 82, of atrophy of the heart muscle.

John R. Brian, St. Francisville, Ill.; Barnes Medical College, St. Louis, 1899; died November 18, aged 74, of coronary thrombosis.

William D. H. Brown, La Grange, Ill.; National Medical University, Chicago, 1902; died in Chicago December 6, aged 86, of multiple lacerations of the right lung with massive hemothorax due to multiple fracture of the ribs as the result of a fall from a porch.

Robert Miller Campbell, Glendale, Calif.; Medical College of Indiana, Indianapolis, 1903; formerly postmaster in La Fayette, Ind., health officer of Tippecanoe County, Ind., and for many years on the board of the Tippecanoe County Tuberculosis Association; died November 11, aged 74, of cerebral hemorrhage.

Charles W. Case, Onsted, Mich.; Medico-Chirurgical College of Philadelphia, 1899; member of the American Medical Association; on the staff of the Bixby Hospital, Adrian; died November 11, aged 65, of carcinoma of the liver.

Walter Chrystie Ⓢ Bryn Mawr, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1883; served on the staff of the Bryn Mawr Hospital, where he died October 9, aged 83, of injuries received when struck by an automobile.

Henry Clay Clements, Benton, Ala.; Medical College of Alabama, Mobile, 1899; member of the American Medical Association; died in a Selma hospital October 30, aged 67, of congestive heart disease and chronic myocarditis.

Louis T. Donaldson, Jennings, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1907; member of the American Medical Association; director of the Jefferson Davis Health Unit; died in the Southern Baptist Hospital, New Orleans, November 4, aged 60, of coronary occlusion.

Robert Morris Dunsmoor, Fontana, Calif.; College of Physicians and Surgeons, Los Angeles, 1913; died November 7, aged 61, of arteriosclerosis.

Louis M. Dusseldorf, Brooklyn; Long Island College Hospital, Brooklyn, 1888; member of the American Medical Association; on the courtesy staff of the Methodist Hospital, where he died November 11, aged 78, of brouchopneumonia, cerebral thrombosis and hypertension.

John Robert Eby, Elko, Nev.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1893; past president of the Elko County Medical Society; at one time chief of staff, Elko General Hospital, where he died October 27, aged 76, of myocardial infarction.

John Wesley Edwards, Staten Island, N. Y.; University of Pennsylvania Department of Medicine, Philadelphia, 1897; a captain in the medical corps of the U. S. Army during World War I; for many years an acting assistant surgeon in the U. S. Public Health Service on duty at the U. S. Quarantine Station in Boston; retired in 1936; died September 25, aged 76, of generalized arteriosclerosis.

Charles Wager Fairchild Ⓢ New York; Columbia University College of Physicians and Surgeons, New York, 1903; on the courtesy staff of the Tarrytown Hospital, Tarrytown; on the staff of the Manhattan State Hospital; died in St. Vincent's Hospital November 15, aged 65, of hypertensive cardiovascular disease.

John David Fakes, Hickman, Ky.; Barnes Medical College, St. Louis, 1899; Hospital College of Medicine, Louisville, Ky., 1900; died in the Keys-Houston Clinic Hospital, Murray, November 11, aged 75, of cirrhosis of the liver.

Thomas Enoch Ferrell, Mountain View, Mo.; Barnes Medical College, St. Louis, 1895; member of the American Medical Association; died in St. John's Hospital, Springfield, November 13, aged 74, of coronary occlusion.

Hamilton S. Gillespie, Sioux City, Iowa; Omaha (Neb.) Medical College, 1898; member of the American Medical Association; past president of the Woodbury County Medical Society; died in St. Joseph Hospital November 14, aged 69, of coronary thrombosis.

James Frank Gullette, Austin, Texas; Memphis (Tenn.) Medical College, 1904; died in an Austin hospital September 24, aged 65, of coronary thrombosis.

C. I. Harris, Morganfield, Ky.; Hospital College of Medicine, Louisville, 1904; past president of the Union County Medical Society; on the staff of the Union County Hospital; died November 17, aged 68, of heart disease.

Daniel Webster Henry, Endicott, Wash.; Jefferson Medical College of Philadelphia, 1905; member of the American Medical Association; died November 10, aged 65, of coronary thrombosis.

William E. Hervey, West Alexander, Pa.; Medical College of Ohio, Cincinnati, 1882; at one time president of the chamber of commerce in Pittsburgh; died in the Ohio Valley General Hospital, Wheeling, W. Va., November 6, aged 89, of fracture of the neck of the femur and senility.

Jacob Oliver Hoffman, Harrisonburg, Va.; University of Michigan Homeopathic Medical School, Ann Arbor, 1883; died September 4, aged 84, of acute prostatitis.

Brooke Ignatius Jamison, Emmitsburg, Md.; University of Maryland School of Medicine, Baltimore, 1905; died November 8, aged 62, of injuries received when struck by an automobile.

James Keho, Tacoma, Wash.; State University of Iowa College of Medicine, Iowa City, 1884; died November 3, aged 86, of cerebral hemorrhage.

Otto Kiene Ⓢ Concordia, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1904; died in a Kansas City hospital November 6, aged 66, of pulmonary infarct.

Patrick Joseph Kingsley, Milton, Mass. (licensed in Massachusetts in 1899); aged 74, died September 25, of hemorrhage due to gastric ulcer.

George William Kittelberger Ⓢ Bowie, Texas; St. Louis University School of Medicine, 1932; member of the Missouri State Medical Association; served an internship at the Bethesda Hospital in St. Louis, St. Luke's Hospital and Shriners' Hospital for Crippled Children in Spokane, Wash.; formerly on the staff of the Eastern State Custodial School in Medical Lake, Wash.; died November 1, aged 44, of brain tumor.

James Henry Lacey, Denver; St. Louis Medical College, 1883; Jefferson Medical College of Philadelphia, 1893; for many years surgeon for the Southern Railway; died in the Denver General Hospital October 31, aged 87, of hypostatic pneumonia, following a fracture of the right femur received in a fall.

Jonathan Morias Larson, Hollywood, Fla.; National Medical University, Chicago, 1905; died November 6, aged 71, of postoperative shock following a cholecystectomy.

Florance Patrick Leehey, Oelwein, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; member of the American Medical Association; for fifteen years city physician; served during World War I; head of the Selective Service Board; on the staff of the Mercy Hospital; died November 6, aged 69, of heart disease.

Charles Robert Lewis Ⓢ Akron, Ohio; Ohio State University College of Medicine, Columbus, 1916; on the staffs of the City Hospital, St. Thomas Hospital and the Peoples Hospital, where he died November 6, aged 62, of pneumonia.

Robert Kirkpatrick Macklin, Pasadena, Calif.; Northwestern University Medical School, Chicago, 1911; served in the medical corps of the U. S. Army during World War I; died November 15, aged 59, of intracranial pressure.

Ira Newton Martin, Portsmouth, Ohio; Eclectic Medical Institute, Cincinnati, 1906; past president of the Hempstead Academy of Medicine; died October 23, aged 72, of cerebral hemorrhage.

Sidney Simon Mayer Jr., Portland, Ore.; University of Oregon Medical School, Portland, 1936; member of the American Medical Association; clinical associate in medicine at his alma mater; served an internship and residency at Johns Hopkins Hospital, Baltimore; died November 2, aged 33, following a thyroidectomy.

Martin McAulay Ⓢ Monterey, Calif.; Hahnemann Medical College of the Pacific, San Francisco, 1904; past president of the Monterey County Medical Society; served during World War I; formerly physician and owner of the El Adobe Hospital; served on the staffs of the Peninsula Community Hospital, Carmel, and the Monterey Hospital; died November 3, aged 69, of carcinoma of the mouth.

Joseph Fennell McKee Ⓢ Chicago; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1894; on the staffs of Anne's Hospital and the Lutheran Deaconess Hospital, where he died September 28, aged 76, of uremia.

Elmer L. Mullin, Manlius, Ill.; Illinois Medical College, Chicago, 1905; on the staff of the Julia Rackley Perry Memorial Hospital, Princeton; died in the Presbyterian Hospital, Chicago, November 12, aged 69, of carcinoma of the bladder.

William S. Napper, Lebanon Junction, Ky.; University of Louisville Medical Department, 1891; died October 26, aged 84, of chronic nephritis.

John Francis Nooe Ⓢ Boerne, Texas; University of Texas School of Medicine, Galveston, 1898; served as a captain in the medical corps of the U. S. Army during World War I; died in San Antonio October 30, aged 71, of coronary thrombosis.

Oscar C. Pabst, Tyler, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1895; member of the American Medical Association; died suddenly October 14, aged 78, of coronary thrombosis.

Benjamin Hamilton Parrish, Cloverport, Ky.; University of Louisville School of Medicine, Louisville, 1913; member of the American Medical Association; died October 13, aged 58, of cerebral hemorrhage.

George F. Plotner, West Mansfield, Ohio; Starling Medical College, Columbus, 1888; died in Cincinnati November 4, aged 85, of cardiovascular renal disease.

Nathan Sylvester Rawdin * New York; Baltimore University School of Medicine, 1900; died October 31, aged 69, of coronary thrombosis.

John King Rector, Washington, D. C.; Howard University College of Medicine, Washington, 1921; served as assistant medical director of the Freedmen's Hospital; died in the Glenn Dale Sanatorium, Glenn Dale, Md., November 9, aged 49, of pulmonary tuberculosis.

Guy Cyrus Rich, Los Angeles; Jefferson Medical College of Philadelphia, 1885; also a dentist; formerly practiced medicine in Sioux City, Iowa; died October 22, aged 83, of carcinoma of the throat.

Edward Karl Richard, Olean, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1918; member of the American Medical Association; served as instructor in medicine at the University of Rochester School of Medicine and Dentistry; formerly on the staffs of the Genesee and Strong Memorial hospitals, Rochester; served as medical superintendent of the Rocky Crest Sanatorium; on the staffs of the Olean General and St. Francis hospitals and the Mountain Clinic; died November 15, aged 51, of coronary occlusion.

John N. Rock * Milwaukee; Rush Medical College, Chicago, 1891; died November 26, aged 79, of coronary arteriosclerosis.

Clarence A. Rogers, Bluefield, W. Va.; Leonard Medical School, Raleigh, N. C., 1912; owner of the Providence Hospital; died November 22, aged 59, of cerebral hemorrhage.

Paul Corcoran Ryan * Pittsburgh; University of Michigan Medical School, Ann Arbor, 1936; served an internship at the Harper Hospital in Detroit and a residency in ophthalmology at the University Hospitals in Iowa City; member of the staffs of St. John's, Shadyside and the Eye, Ear, Nose and Throat hospitals; died November 13, aged 37, of rheumatic heart disease and mitral stenosis.

Henry Fenno Sawtelle * Arroyo Grande, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; U. S. Army Medical School, 1926; served during World War I; formerly a major in the medical corps of the U. S. Army; at one time medical examiner for the pension office in Washington, D. C., where he later became chief sanitary inspector for the health department and assistant health officer; died December 2, aged 66.

Clarke Wesley Shepherd, Spring Hill, W. Va.; Baltimore University School of Medicine, 1891; died in the Memorial Hospital, Huntington, December 18, aged 80, of uremia, myocardial failure and pulmonary edema.

Kathryn Forbich Thumm Smith, Casper, Wyo.; Jenner Medical College, Chicago, 1914; member of the American Medical Association; died in Cheyenne November 29, aged 71, of uremia.

Philip McClellan Steckman * Plattsburg, Mo.; Jefferson Medical College of Philadelphia, 1889; died in a hospital in St. Joseph November 11, aged 79, of esophageal hemorrhage.

Glenn Morris Steele, Tacoma, Wash.; the Hahnemann Medical College and Hospital, Chicago, 1903; member of the American Medical Association; died December 3, aged 66, of carcinoma of the stomach.

Lawrence Henry Stepp, Mars, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1895; member of the American Medical Association; past president of the board of health and Kiwanis Club of Mars; died November 26, aged 77, of angina pectoris.

Archibald William Thompson * Buffalo; University of Buffalo School of Medicine, 1916; member of the Radiological Society of North America, Inc.; specialist certified by the American Board of Radiology, Inc.; served during World War I; on the staffs of the Lafayette General and Our Lady of Victory hospitals; died in Eden, N. Y., October 22, aged 53, of carcinoma.

Francis Elmer Wilhelm * Kansas City, Kan.; University of Kansas School of Medicine, 1906; an Affiliate Fellow of the American Medical Association; member of the Missouri State Medical Association; served on the staffs of St. Luke's and St. Joseph hospitals, Kansas City, Mo.; died September 26, aged 71, of rheumatic heart disease and probably heart block.

DIED WHILE IN MILITARY SERVICE

Raymond Leo Abraham, Chicago; Loyola University School of Medicine, Chicago, 1933; member of the American Medical Association; served an internship at St. Elizabeth Hospital; commissioned a first lieutenant in the medical corps, Army of the United States, on June 3, 1942; later promoted to captain; died at the Charleston port of embarkation, South Carolina, Sept. 27, 1944, aged 38, of coronary thrombosis.

William Etheridge Dierking, Passed Assistant Surgeon, Lieutenant, U. S. Navy, Louisville, Ky.; University School of Louisville School of Medicine, 1939; member of the American Medical Association; served an internship at St. Elizabeth Hospital, Covington, and a residency in pediatrics at the Louisville City Hospital; commissioned a lieutenant (jg), medical corps, U. S. Navy, on April 14, 1942; promoted to lieutenant on Oct. 1, 1942; died Aug. 31, 1944, aged 31, of acute poisoning, substance unknown.

Richard Franklin Halford, Augusta, Ga.; University of Georgia School of Medicine, Augusta, 1940; served an internship at the James M. Jackson Memorial Hospital, Miami, Fla.; commissioned a first lieutenant in the medical corps of the Army of the United States on Aug. 7, 1941; later promoted to captain; flight surgeon during the first invasion of North Africa and on other battle fronts; died in the North African theater of operation August 17, 1944, aged 28, in an airplane crash.

Robert McCurdy Kennedy, Elgin, Ill.; Northwestern University Medical School, Chicago, 1938; diplomate of the National Board of Medical Examiners; served an internship at City of Detroit Receiving Hospital, Detroit; formerly a medical missionary to India; commissioned a lieutenant (jg) in the medical corps, U. S. Naval Reserve, on Oct. 27, 1943; drowned at sea when the ship sank in a hurricane in the Atlantic area Sept. 13, 1944, aged 33.

Gayle Harold Laymon, St. Joseph, Ill.; Chicago Medical School, 1934; member of the American Medical Association; served an internship at the South Shore Hospital, Chicago; commissioned a first lieutenant in the medical corps, Army of the United States, on Dec. 28, 1942; began active duty on Jan. 13, 1943; later promoted to captain; died in Kodiak, Alaska, April 9, 1944, aged 42, as the result of cerebrovascular disease.

Thomas Joseph Lennon * San Francisco; University of California Medical School, San Francisco, 1924; formerly an intern at the San Francisco Hospital; at one time resident physician at St. Mary's Hospital, where he was chief of medicine and member of the executive committee; served as clinical instructor in medicine at his alma mater; commissioned a captain in the medical corps, Army of the United States, on Jan. 15, 1941; began active duty on May 15, 1942; promoted to major; served overseas with the 30th General Hospital; died in the Hammond General Hospital, Modesto, Nov. 13, 1944, aged 48, of carcinoma of the lung.

John Anthony Mastromarino, Revere, Mass.; Middlesex University School of Medicine, Waltham, 1940; served an internship at St. Luke's Hospital in Newburgh, N. Y., and a residency at the Cornwall Hospital, Cornwall, N. Y.; commissioned a first lieutenant in the medical corps, Army of the United States, on May 17, 1943; died in the Southwest Pacific area Oct. 26, 1944, aged 29, of yellow atrophy of the liver.

Wesley Nestor Warvi, Lead, S. D.; University of Wisconsin Medical School, Madison, 1939; served an internship at the University of Kansas Hospitals, Kansas City, Kan., and a residency at the Collis P. Huntington Memorial Hospital in Boston and the Cincinnati General Hospital in Cincinnati; commissioned a first lieutenant in the medical corps, Army of the United States, on Dec. 30, 1943; killed in an automobile accident near Ogallala, Neb., July 30, 1944, aged 34.

Jonathan Wooden Williamson, Atlanta, Ga.; Emory University School of Medicine, Atlanta, 1939; associate member of the Medical Association of Georgia; served an internship at the Grady Hospital; commissioned a lieutenant (jg) in the medical corps of the U. S. Naval Reserve on July 25, 1941; later commissioned a lieutenant; died April 27, 1943, aged 28.

Correspondence

APPRAISAL OF NEW DRUGS

To the Editor:—Introduction of new chemical agents for clinical use involves a serious responsibility and requires the utmost care in skilful execution and interpretation of laboratory findings and sound judgment in evaluation of clinical results, as emphasized years ago (*THE JOURNAL*, Nov. 23, 1929, p. 1632). Both laboratory and clinical studies must conform to the best accepted standards for the specific types of experiments involved. The desirability of setting up a universally standard scheme of appraisal, such as that authorized "as a pattern" by the Council on Pharmacy and Chemistry in *THE JOURNAL*, Dec. 9, 1944, page 958, may nevertheless be questioned. Aside from differences of opinion regarding the most valid technics for particular phases of a standardized appraisal, it is doubted that standardization of the experimental background for new drugs should be as detailed as that recommended.

Ultimately the value of any chemical agent in treatment depends on the relation between its therapeutic hazard and the disease hazard. Neither of these factors can be satisfactorily quantified. The therapeutic hazard may be established only roughly from laboratory studies or even preliminary clinical trials and may be changed appreciably by variations in the disease process. The disease hazard often varies during the course of the process and also with many factors whose evaluation involves the art of medicine rather than judgment based on quantitative data. Final evaluation of new drugs always depends on the trained senses of many experienced clinicians after release of the agent for general use, and only indirectly on the preliminary clinical tests and laboratory findings. The problems involved in the introduction of new drugs then resolve themselves into (a) recognition of appreciable therapeutic efficacy and (b) recognition of toxic effects. Assuming reasonably favorable laboratory reports of efficacy, the significant data in this regard must come from the preliminary clinical trials. On the other hand, the toxic hazards should be so well understood from laboratory studies that no human material is sacrificed in preliminary clinical experiments.

Laboratory experiments should therefore be directed not toward extensive pharmacodynamic tests with toxicity tests secondary but toward exhaustive study of toxic hazards with integration of the information so gained into the pharmacodynamic matrix. The proposed standardized appraisal does not stress the necessity of using toward this end the multitudinous phases of study recommended. For example, it is as important to study the toxic hazard in disease states as it is to determine the efficacy of the drug in these conditions, and the pharmacodynamic knowledge would not suffer by inclusion of studies with a drug level in the toxic range. Studies of absorption, distribution and fate of new agents also should be carried out with toxic as well as therapeutic doses.

The proposed evaluation of toxicity in the standardized appraisal could well be more flexible. More useful information can be obtained, for example, by a relatively casual study of effects of central nervous system drugs on a single species among the primates or other large mammals than by any amount of work on batrachians or small rodents. Enough species should certainly be included to yield a clear picture of the degree of species variability, but the species chosen and their number should be selected intelligently to match the properties of the drug. Thorough study of a few appropriate species is preferable to an extensive, less accurate study.

The use of a therapeutic index defined as ED_{50}/LD_{50} is of value only in rough comparison of compounds in the earlier stages of laboratory development. Abuse of this ratio to denote relative safety of compounds used clinically is not unknown. The clinician is interested primarily in the margin of safety,

which can also be expressed in the form of a ratio as the certain safety factor (LD_{50}/ED_{50}).

Especially for drugs likely to be used repeatedly, estimations of subacute and chronic toxicities are essential. However, insistence on studying effects for the entire life span of "at least one species" seems pointless; we are not aware of any drug for which additional information regarding any factor except life span itself could be obtained with this technic which could not be obtained equally well from properly designed experiments covering a shorter period, such as six to nine months for mice. Estimations of acute or subacute toxicity in very young and senile animals may be necessary for certain drug types, but the indirect gathering of this information by conforming to a standardized appraisal recommending treatment throughout the life span can but result in delay in introduction of possibly useful agents.

Criticism of a standard appraisal scheme suitable for all types of drugs should not be construed as a criticism of standardization of study of specific types. The proposed detailed plan is stated to be applicable to evaluation of "really new drugs," and short cuts in the procedures are condoned for "a few isolated cases" only. Most new agents introduced recently, such as the barbiturates, phenalkylamines and antispasmodics, have been designed as modifications of recognized useful agents. Comparative studies of efficacy and toxic hazards of these should be intensive in those phases indicated by past experience with the type compounds. In each group of compounds, however, only a fraction of the procedures noted in the standard appraisal need be carried out. For studies of this kind, general agreement as to the validity of the appropriate methods of study would be helpful.

Basically there is no moral difference between deaths caused by the useless withholding of new superior agents and deaths caused by premature use of untested agents. Any aids to evaluation of new compounds must recognize this, and we do not believe that the aim of fostering therapeutic research for the betterment of pharmacotherapy is served well by overly critical standards for preliminary study of new agents.

CHAUNCEY D. LEAKE, PH.D.

RAYMOND GREGORY, M.D.

PAUL L. EWING, PH.D.

GEORGE A. EMERSON, PH.D.

University of Texas Medical Branch,
Galveston, Texas.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and board of examiners in the basic sciences were published in *THE JOURNAL*, January 20, page 184.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Part I. Various centers, Feb. 19-21. Part III. Various centers, June. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: New York, June 8-9. Final date for filing application is March 12. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: Springfield, Ill. Final date for filing application is Feb. 1. Sec., Dr. Paul C. Bucy, 912 S. Wood St., Chicago 12.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written, Part I. Various centers, Feb. 3. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, June 5-8. Final date for filing application is March 1. Chicago, Oct. 5-6. Sec., Dr. Dean M. Lierle, 111 N. La Salle St., Chicago 10.

AMERICAN BOARD OF RADIOLOGY: Oral. New York, June 3. Final date for filing application is May 1. Sec., Dr. B. R. Kirklin, 102-110 1028 Connecticut Ave. N.W., Washington 6, D. C.

AMERICAN BOARD OF RADIOLOGY: Oral. New York, June 3. Final date for filing application is May 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: Oral. Chicago, Feb. 19-22. Sec., Dr. G. J. Thomas, 1409 Willow St., Minneapolis 4.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1935 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Annals of Internal Medicine, Lancaster, Pa.

21:565-746 (Oct.) 1944

- *Roles of Medicine and Surgery in Management of Bronchiectasis. J. Alexander.—p. 565.
- *Sternal Puncture as Practical Diagnostic Procedure. S. Propp and J. L. Schwind.—p. 580.
- *Kala Azar: Review of Its Incidence and Epidemiology in China and Clinical Observations on 585 Cases. F. G. Scovel.—p. 607.
- Periarteritis Nodosa: Present Knowledge of Disease. M. McCall and J. W. Pennock.—p. 628.
- Periarteritis Nodosa, with Report of 3 Cases Diagnosed During Life. S. Solomon, M. Kasich and N. Kiven.—p. 638.
- Electrocardiographic Study of Cardiac Aging Based on Records at Rest and After Exercise. M. Mazer and J. A. Reisinger.—p. 645.
- Leukocytes and Sympathoadrenal System. F. B. Clare, C. H. Cress and E. Gellhorn.—p. 653.
- Extraneal Uremia: Report of 2 Cases Due to Pyloric Obstruction. E. J. O'Donovan and F. D. Murphy.—p. 662.

Medical and Surgical Treatment in Bronchiectasis.—

According to Alexander the safety of pulmonary lobectomy has solved the problem of treatment for approximately half the bronchiectasis patients; the other half, for various reasons (especially because of extensive bilateral lesions), are not suitable for the operation. Nonsurgical methods of treatment, if properly and faithfully carried out, can be made effective in greatly alleviating the distressing symptoms of the disease in a large majority of patients in spite of the pessimistic opinions about the value of nonsurgical treatment that have been expressed recently.

Sternal Puncture as Diagnostic Procedure.—Propp and Schwind studied 140 cases of diseases of the blood and hemopoietic system and cases in which the possibility of such disorders entered into the differential diagnosis. Twenty punctures on patients without hematologic disorders and ranging in age from 17 to 41 years served as normal standards. Sternal puncture is an extremely valuable and practical diagnostic method. Elaborate techniques of handling and studying the marrow samples, however valuable from a research standpoint, are unnecessary for clinical use. Indicated punctures gave information of clinical value in 65 per cent of the cases. Diagnosis was established by puncture in 16.2 per cent of the 74 indicated cases. Sternal puncture cannot be substituted for thorough clinical investigation. The more thorough the work-up of the patient, the easier and more valuable is the interpretation of the puncture. Most diseases do not show specific changes in the marrow from which a definite diagnosis can be made, but much valuable information can be obtained which is of aid in the differential diagnosis and subsequent handling of the patient. Diagnoses should be made only from specific myelograms. A negative result does not absolutely preclude the presence of a given disease because of the possibility of not having secured a representative sample of marrow and of atypical variations in the pathologic lesions of the disease. Punctures which yield no marrow cells on aspiration should be followed by a trephine biopsy, if the diagnosis can be reached in no other way and no contraindication is present.

Kala Azar in China.—Kala azar is endemic throughout the whole of China north of the Yangtze River. It is most common below the age of 15, although in the series of 585 cases reported by Scovel there was an unusually large number of patients from 15 to 40 years of age. Most of the patients are from the farmer or coolie class living in small villages. Epidemiologic studies point to the sandfly as the vector and the dog as the reservoir host for the parasites. This is borne out by the ability of *Phlebotomus chinensis* to receive and retain

the parasites even in the absence of blood, by the growth of flagellates in the intestine of the fly and their forward extension into the proboscis, by the apparent identical nature of *Leishmania canis* and *donovani* as revealed by similar complement fixation reactions and by direct transmission of the disease to man through the bite of infected flies. The most important physical signs are an enlarged spleen, a low grade fever with tachycardia, anemia, most pronounced in children, and a leukopenia, which is more severe in the older and more chronic cases. Sternal marrow smears were positive in 81 per cent of 557 examinations and constituted the most valuable means of diagnosis. Complications were more frequent in older patients with a protracted history. The most common of these were pneumonia, amebic and bacillary dysentery, bronchitis and noma. There were thirty deaths in 585 patients, a mortality rate of 5.1 per cent. Only 3 of these succumbed to kala azar alone, the remaining having complications, mostly pneumonia. Six relapses occurred. Prophylaxis should consist in eradication of sandfly breeding places, removal of infected dogs and segregation of patients. Untreated patients gradually lose weight and strength until their debilitated condition makes them subject to some complication, which is usually the cause of death. Kala azar responds readily to treatment with antimony. The author used pentavalent antimony compounds (neostibosan and neostam), giving approximately 1 Gm. to 33 pounds (15 Kg.) of body weight in nine to sixteen intravenous injections of a 0.5 per cent solution. Few reactions occurred with neostibosan. Gastrointestinal upsets were common in patients receiving neostam (stibamine glucoside). The parasites disappear more slowly from the bone marrow than from the liver and spleen. Antimony is contraindicated in the presence of jaundice, hepatitis, pneumonia or acute nephritis.

Archives of Pathology, Chicago

38:187-286 (Oct.) 1944

- *Pathologic Anatomy of "Atypical Pneumonia, Etiology Undetermined": Acute Interstitial Pneumonitis. A. Golden.—p. 187.
- Amyloidosis in Atypical Sites (Cardiac Valves, Larynx). D. M. Spain and R. C. Barrett.—p. 203.
- Leiomyoma of Stomach. W. A. Meissner.—p. 207.
- Experimental Atherosclerosis: VI. Effects of Various Bile Acids on Cholesterol Levels. S. Member, M. Bruger and E. Oppenheim.—p. 210.
- Effect of 3,4-Benzpyrene on Regenerating Epidermis of Mice. M. Silberberg and Ruth Silberberg.—p. 215.
- Irritation and Carcinogenesis. I. Berenblum.—p. 233.
- Arteriosclerosis. W. C. Hueper.—p. 245.

Pathologic Anatomy of 'Atypical Pneumonia.—During the years 1940 to 1944 the central pathologic laboratory of the United States Army collected 90 cases of "atypical pneumonia, etiology undetermined," in which postmortem examinations were made. Golden analyzes the morbid anatomic changes in the 42 cases of that series in which case histories and necropsy protocols are reasonably complete and enough tissue was available for an unequivocal estimate of the pathologic process. All of the cases acceptable for this report were cases of acute interstitial pneumonitis, a designation which the author uses in preference to the clinical designation of "atypical pneumonia, etiology undetermined." In a number of instances portions of the lungs at necropsy showed bronchopneumonia and occasionally lobar pneumonia, as well as areas of acute interstitial pneumonitis. The composite description is based on 21 cases in which multiple sections of lung revealed only acute interstitial pneumonitis. The following were the pathologic changes displayed by all cases in common: 1. There was acute bronchiolitis, focally distributed, in which desquamation of the mucosal surfaces occurred early. 2. The lumens of such bronchioles contained pus, mucoid fluid and desquamated epithelial clusters or single cells, sometimes in an advanced stage of disintegration. 3. Bacteria in small numbers and not of uniform type could be demonstrated in the bronchiolar pus in some cases. 4. The bronchioles were dilated, even in cases in which death occurred early in the disease. 5. The walls of such bronchioles were infiltrated chiefly with mononuclear cells, which extended radially into the regional interstitial tissues of the lung, namely the peribronchiolar tissues, the alveolar walls and the pulmonary septums. 6. The alveoli either contained air or were collapsed, and they differed from those involved in bronchopneumonia and lobar pneumonia in being relatively free of polymorphonuclear leuko-

cytic exudate. 7. Such areas failed to reveal micro-organisms on tissue section. 8. With the advent of secondary bacterial invasion the gross and microscopic pictures were altered: in some cases it was possible to discover areas of acute interstitial pneumonitis adjacent to zones of typical bronchopneumonia, lobar pneumonia or pulmonary abscess. The chief lesions were comparable to those of certain other infections, notably of influenza pneumonia uncomplicated by secondary bacterial infection and of uncomplicated measles pneumonia. There is anatomic evidence indicating that these lesions are caused by one or more viruses.

Archives of Surgery, Chicago

49:213-300 (Oct.) 1944

- Fractures About Elbow in Children. H. B. Boyd and A. R. Altenberg.—p. 213.
- *Effect of Topical Application of Vitamins and Other Chemicals on Healing of Wounds. R. H. Williams and G. W. Bissell.—p. 225.
- Triphalangeal Bifid Thumb: Report of 6 Cases. P. W. Lapidus.—p. 228.
- Venous Pressure as Index of Blood Flow in Upper Extremity. G. W. Duncan.—p. 235.
- Intravenous Administration of Dextrose in Treatment of Patients with Disease of Biliary Tract. H. A. Zintel, Cecelia Riegel, Rozanne Peters and J. E. Rhoads.—p. 238.
- Subarachnoid Analgesia Maintained by the Continuous Drop Method. Julia G. Arrowood and F. F. Foldes.—p. 241.
- *Penicillin in Treatment of Chronic Osteomyelitis: Report of 40 Cases. D. G. Anderson, L. G. Howard and C. H. Rammelkamp.—p. 245.
- Progress in Orthopedic Surgery for 1943: A Review prepared by an Editorial Board of the American Academy of Orthopaedic Surgeons: VII. Conditions Involving Elbow, Forearm, Wrist and Hand. W. P. Blount.—p. 258.
- VIII. Conditions Involving Knee Joint. R. K. Ghormley.—p. 261.
- IX. Fractures. W. G. Stuck, R. B. Raney, J. J. Fahey, D. H. O'Donoghue and H. F. Johnson.—p. 265.
- X. Congenital Dislocation of Hip. A. B. Gill.—p. 285.
- XI. Conditions Involving the Spine and the Thorax. J. R. Cobb.—p. 287.

Topical Applications in Healing of Wounds.—Williams and Bissell studied the effects of vitamins and various other substances on the acceleration of healing when applied topically to wounds of uniform size in normal rats. The substances studied were vitamins A, C, D and E, thiamine hydrochloride, nicotinic acid, riboflavin, calcium pantothenate, pyridoxine, biotin, hydrosulphosol, biodyne, urea-sulfathiazole ointment, amino acids, adenosine, liver extract, cod liver oil, a "vitamin mixture" and sesame oil. The effect of sulfamerazine used in conjunction with most of these substances was also observed. No definite benefit was derived from the use of any of these substances as judged by frequent observations of the wounds and the microscopic changes.

Penicillin in Chronic Osteomyelitis.—Anderson and his associates report 40 cases of chronic osteomyelitis treated with penicillin. In 25 it has been possible to conduct follow-up observations for a year or longer after completion of the first course of treatment with penicillin. Most of the patients had received intensive therapy with sulfonamide drugs without benefit, and many of them had had recent surgical treatment. *Staphylococcus aureus* was cultured from material from the local lesion in all but 2 cases. In 31 of the 40 cases only one course of penicillin therapy was given, while in 9 penicillin was given on two separate occasions. All the patients received penicillin by intravenous or intramuscular injections at intervals of three or four hours. A few received a portion of the penicillin by continuous intravenous infusion. The use of penicillin locally without simultaneous parenteral administration has been ineffective. When used in conjunction with systemic therapy, local administration of penicillin may offer certain advantages. Since sequestrums have no blood supply, penicillin from the blood stream reaches bacteria present in sequestrums with difficulty. Osteomyelitic cavities within sclerosed bone, although partially vascularized, present a similar problem, since penicillin will not diffuse into such areas from the blood stream in adequate concentration. Local circulation is also impaired in soft tissue scars and sinus tracts. As a result of these considerations, all sinus tracts and all scar and granulation tissue were excised as far as was possible. Osteomyelitic cavities that were suspected of being the site of active infection were exposed and thoroughly curetted. A window to permit curettage was made in the bone, but the cavities were not saucerized. The surgical procedure made the operated area a relatively closed system, with penicillin reaching it both from the blood stream and through catheters.

In this fashion it was possible to maintain a constant high concentration of penicillin at the site where it was most needed. Penicillin, by inhibiting the growth and multiplication of bacteria, will arrest the infection in a high percentage of cases and thus allow healing to take place. In only a small percentage of cases does the use of penicillin fail to produce significant improvement.

Bulletin of the Johns Hopkins Hospital, Baltimore

75:199-250 (Oct.) 1944

- Irradiation Pneumonitis: Case. T. O. Alexander.—p. 199.
- Studies on Fracture Convalescence: II. Influence of Diet on Post Traumatic Nitrogen Deficit Exhibited by Fracture Patients. J. E. Howard, Jane Winternitz, William Parson, R. S. Bigham Jr. and Harry Eisenberg.—p. 209.
- Type of Neuritis Associated with Malarial Fever. A. M. Harvey.—p. 223.
- *Treatment of Primary and Secondary Yaws with Penicillin. R. C. Whitehill and R. Austrian.—p. 232.
- *Mumps with Presternal Edema. S. S. Gellis and M. Peters.—p. 241.

Treatment of Yaws with Penicillin.—Whitehill and Austrian direct attention to the fact that recent laboratory and clinical investigations have produced results which suggest strongly the potential value of penicillin in the treatment of diseases caused by spirochetes and closely allied organisms. Patients with yaws treated with penicillin were admitted to the wards of a British colonial service hospital for observation during and after the period of treatment. The total dosage of penicillin employed was set at approximately 500,000 units; 15,000 units was given intramuscularly every four hours day and night for five to six days. The drug solution was made daily by dissolving the dry powder in enough sterile isotonic solution of sodium chloride to produce a concentration of 10,000 units of penicillin per cubic centimeter. Seventeen cases of primary and secondary yaws from which *Treponema pertense* was isolated by dark field examination have been treated with penicillin. The drug caused disappearance of *Treponema pertense* from the cutaneous lesions within sixteen hours in 16 cases and within forty hours in 1 case. Penicillin therapy brought about complete healing within three weeks of all the cutaneous manifestations of yaws with the exception of one lesion, which failed to epithelize because of local scar formation. During the short period of observation penicillin did not affect significantly the serum Kahn reaction in yaws.

Mumps with Presternal Edema.—Gellis and Peters report observations on 502 patients with mumps admitted to the station hospital at Fort Benning, Georgia, in the spring of 1944. Of these patients 30 exhibited presteral edema. The outbreak involved young army inductees from Southern rural areas and did not appear to be of unusual severity. The onset of the edema was noted on the average of 5.8 days from the appearance of glandular swelling and lasted on the average five days. The lower border of the edema invariably assumed the shape of a necklace and extended downward to a point ranging between the third interspace and the xiphoid process. Laterally the edema extended an equal distance on the two sides of the sternum, varying from a point 3 cm. from the edge of the sternum to the midclavicular line. The edema usually reached its height on the second day after its onset. In 3 patients the skin of the involved area assumed a dull red hue. Only 5 patients developed symptoms coincident with the edema; 2 complained of dysphagia of about twenty-four hours' duration, another of hoarseness, and 2 of tenderness over the sternum when pressure was applied. All patients were afebrile at the time of the edema. The frequency of orchitis was no greater in the group of 30 patients than in the remaining 472 patients. The authors think that obstruction to lymphatic drainage by the swollen glands is responsible for the presteral edema.

Cancer Research, Baltimore

4:673-736 (Nov.) 1944. Partial Index

- Dependence of Genesis of Induced Skin Tumors on Caloric Intake During Different Stages of Carcinogenesis. A. Tannenbaum.—p. 673.
- Influence of Bromobenzene on Induction of Skin Tumors by 3,4-Benzpyrene. H. G. Crabtree.—p. 688.
- Influence of Malignant Cells on Growth of Fibroblasts in Vitro. R. J. Ludford and Hilda Barlow.—p. 694.
- Ascorbic Acid Content of Liver in Pregnant Mice. E. L. Kennaway and N. M. Kennaway.—p. 704.
- Serial Passage of Avian Lymphoid Tumor of Chicken. C. Olson Jr.—p. 707.

Gastroenterology, Baltimore

3:251-336 (Oct.) 1944

- *Chronic Gastritis and Carcinoma of Stomach. S. Warren and W. A. Meissner.—p. 251.
Gastric Carcinoma: Observations on Peptic Ulceration and Healing. W. P. Palmer and Eleanor M. Humphreys.—p. 257.
*Disorders of Liver and Extrahepatic Biliary Ducts Associated with Cutaneous Xanthomas and Hyperlipemia. G. B. Eusterman and H. Montgomery.—p. 275.
Clinical Significance of Palpable Spleen. W. F. Lipp, Ellen H. Eckstein and A. H. Aaron.—p. 287.
Urobilinogen in Human Bile. I. R. Jankelson.—p. 292.
Varied Clinical Manifestations of Lymphosarcoma of Stomach. H. A. Rafsky, Harry Katz and C. I. Krieger.—p. 297.
Study of Alleged Effect of Milk on Human Gastric Potential and Description of New Method for Measuring the Potential. W. S. Rehm and A. J. Enelow.—p. 306.
Observations on Absorption and Excretion of Minerals by Rectal Mucosa in Man. F. R. Steggerda.—p. 314.

Chronic Gastritis and Carcinoma of Stomach.—Warren and Meissner discuss observations on the mucosa of 356 stomachs which were completely or partially removed for gastric carcinoma or for peptic ulcer. They found that chronic gastritis is a labile condition which may regress and which need not necessarily progress. Not all stages or types of chronic gastritis can be considered to be precancerous. The microscopic changes in chronic gastritis should be divided into exudative and epithelial, the former having no direct significance as a precancerous lesion. When epithelial changes become severe they may be comparable to well recognized premalignant lesions elsewhere in the body. Since one stage of chronic gastritis meets the necessary criteria for a precancerous lesion, it may be assumed that some gastric cancers arise on this basis.

Disorders of Liver Associated with Cutaneous Xanthomas and Hyperlipemia.—Eusterman and Montgomery report the history of a woman aged 48 who came to the Mayo Clinic in May 1941 complaining of severe, refractory generalized intense pruritus, continuous aching pain and hyperesthesia, especially in both extremities, cutaneous yellow nodules, gastrointestinal disturbances, loss of weight and strength, yellowing discoloration of the skin, and severe physical and nervous exhaustion. Physical examination disclosed icterus, anemia and cachexia of moderate degree in addition to a generalized xanthochromia, especially of the forehead, face, neck and thorax. Yellow nodules were present on the buttocks, lower part of the back, upper part of the thigh, elbows and both cheeks. Nodules and infiltrated plaques were present on the extensor surfaces of the legs, achilles tendons and eyelids. There were yellowish infiltrations demarking the creases of the palms, as well as discrete nodules on the palms and soles. The liver was firm, insensitive, not especially nodular and considerably enlarged. Although the feces were normal in color, biliuria was present. The serum bilirubin was 5 mg. per hundred cubic centimeters and there was a direct van den Bergh reaction. The bromsulphalein test disclosed retention of the dye grade 4. The albumin-globulin ratio was lowered, and severe hyperlipemia was present. A tentative diagnosis of xanthomatous biliary cirrhosis was made, and the prognosis was regarded as unfavorable. The treatment consisted of a high carbohydrate, high protein, minimal animal fat diet in addition to vitamin concentrates, iron and liver extract. In addition, 1½ ounces (45 Gm.) of a preparation of lipocain was administered daily. Moderate improvement was followed by slowly progressive decline. Death occurred after three days of coma, presumably hepatic, and massive terminal gastroenteric hemorrhage. The authors emphasize that the hyperlipemia was very severe; the values for the plasma phospholipids and the plasma cholesterol were many times the normal values. The relative values for the various lipids was consistent with Thannhauser and Magendanz's concept of essential xanthomatosis as seen in so-called xanthomatous biliary cirrhosis. From the cutaneous standpoint this case substantiates a previous statement by one of the authors that involvement of the palms and soles is a frequent accompaniment of xanthomatosis associated with hepatic disease. The authors stress that cutaneous xanthomas and hyperlipemia occasionally occur in association with primary disease of the liver, so-called xanthomatous biliary cirrhosis, and in association with hepatic disease that is secondary to obstruction of the common bile duct, especially as the result of postoperative stricture. In cases in

which the hepatic disease is primary, the prognosis is generally unfavorable. It is more favorable in cases in which the underlying pathologic process is due to obstruction of the common bile duct. The exact cause of cutaneous or systemic xanthomatosis remains to be determined.

Journal of Aviation Medicine, St. Paul

15:213-296 (Aug.) 1944

- Some Observations on Validity of Schneider Test. C. Taylor and G. E. Brown Jr.—p. 214.
Neuropsychiatric Aspects of Civilian Pilot Examination. W. C. McConnell and W. H. McConnell.—p. 231.
Importance of Human Sizing Standards in Aviation. A. Damon, F. E. Randall, R. S. Benton and Alice M. Brues.—p. 238.
Effect of Nasal Ventilation on Tubal Equalizing Efficiency in Flying Personnel. H. J. Sternstein and J. B. McGregor.—p. 244.
Role of Extraocular Musculature in Aviation Physical Examination. A. J. Herbolsheimer.—p. 258.
Allergy of Upper Respiratory Tract. E. E. Poos.—p. 264.
Preliminary Survey on Color Vision Plates of Shinobu Ishihara. G. S. Backenstoc.—p. 272.
Unusual Type of Aircraft Accident. I. M. Campbell.—p. 279.

Journal of Pharmacology & Exper. Therap., Baltimore

82:1-102 (Sept.) 1944

- Control of pH During Experiments on Mode of Action of Sulfonamides. J. S. Harris and H. I. Kohn.—p. 1.
Relative Rates of Absorption of Quinine and Some Other Cinchona Salts from Isolated Intestinal Loops of Dogs. W. E. Cornatzer and J. C. Andrews.—p. 3.
In Vitro Bacteriostatic Action of Some Simple Furan Derivatives. M. C. Dodd and W. B. Stillman.—p. 11.
Simple Method for Routine Search for Antibiotic Substances Produced by Molds. N. W. Pinschmidt and B. Levy.—p. 19.
Antispasmodic Activity of Some 4-Morpholinealkyl Esters. R. O. Bauer and F. F. Yonkman.—p. 23.
Absorption of 4:4'-Diamidino Stilbene (Stilbamidine) by Trypanosomes and Its Blood Concentration in Animals. F. Hawking.—p. 31.
Some Circulatory Effects of Prinine Hydrochloride. G. A. Emerson.—p. 42.
Influence of "Heart Stimulants" on Contraction of Isolated Mammalian Cardiac Muscle. S. Krop.—p. 48.
Interaction Between Procaine, Cocaine, Adrenalin and Prostigmine on Skeletal Muscle. N. T. Jacob and D. R. Wood.—p. 63.
Antidiuretic Action of Morphine and Its Mechanism. R. C. DeBodo.—p. 74.
Effect of Ascorbic Acid on Acute Toxicity of Sulfanilamide for Guinea Pigs. L. Karel and C. W. Chapman.—p. 86.
Comparison of Action of 1-Ethyl Theobromine and Caffeine in Animals and Man. C. C. Scott and K. K. Chen.—p. 89.
Comparison of Esters of Strophanthidin in Cats. F. A. Steldt, R. C. Anderson and K. K. Chen.—p. 98.

Journal of Urology, Baltimore

52:283-374 (Oct.) 1944

- *Sterile Pyuria. W. T. Briggs.—p. 283.
Hematuria Due to Minute Changes in Renal Papillae. R. M. Bobbitt, C. A. Hoffman and S. Werthammer.—p. 288.
Renal Hypertension: Case. H. C. Bumpus Jr.—p. 295.
Pregnancy After Bilateral Ureteral Transplantation: Report of Case After Bilateral Ureterocutaneous Transplantation. L. Herman and L. B. Greene.—p. 300.
Xanthoma and Carcinoma in Diverticulum of Urinary Bladder. A. J. Scholl.—p. 305.
Papillomatosis of Bladder and Entire Urethra: Infiltrating Cancer of Bladder: Late Pulmonary Metastasis: Successful Pneumonecctomy. C. L. Deming and G. E. Lindskog.—p. 309.
Retention of Urine in Children Due to Extravesical Pelvic Disease: Report of 2 Cases. C. P. Howze and D. S. Jaeger.—p. 319.
Orchiectomy for Carcinoma of Prostate: Personal Experiences. N. P. Rathbun.—p. 326.
Excretion of 17-Ketosteroids in Carcinoma of Prostate. E. G. Frame and H. J. Jewett.—p. 330.
Rupture of Testicle: Report of Cases and Review of Literature. V. S. Counsellor and J. H. Pratt Jr.—p. 334.
Case of Epididymo-Orchitis Following Trauma. A. Mason and G. H. Reifstein.—p. 338.
New Operation for Midscrotal Hypospadias. D. M. Davis.—p. 340.
Treatment of Renal Obstruction Resulting from Sulfadiazine and Sulfamerazine. O. J. Jensen Jr. and Charles L. Fox Jr.—p. 346.
Use of Dicumarol and Vitamin K in Urologic Cases. E. Smith and J. Kaufmann.—p. 353.
Studies Concerning Effects of Calcium on Urinary Tract. H. R. Trattner and B. J. Walzak.—p. 357.

Sterile Pyuria.—There exist several theories regarding the etiology of the so-called sterile pyuria. Evidence at present points to some gram positive coccus which is difficult to grow and hard to find in stained smears. The sulfonamides, usually so effective in coccic as well as in bacillary infections, are of little avail in this condition. Briggs thinks that, as Wildbolz

suggested, some of the arsenicals should be used for every patient presenting symptoms of renal tuberculosis unless a definite diagnosis has been made by finding the tubercle bacillus, by guinea pig inoculation or by pyelographic evidence of that disease. Other less toxic drugs should be tried before resorting to an arsenical. The author reports 4 cases in which neoarsphenamine was employed with good results. The disease is probably not due to a virus, because virus diseases do not respond to the arsenicals. It is seldom cured by the urinary antiseptics, including the sulfonamides. It responds to the arsenicals sometimes in a spectacular manner.

Military Surgeon, Washington, D. C.

95:345-440 (Nov.) 1944. Partial Index

- Present Concepts of Virus Diseases. E. F. Pearson.—p. 345.
The Psychoneuroses of War. J. L. Henderson and M. Moore.—p. 349.
March Fractures: Series of 58. W. A. Dew and J. H. Wooten.—p. 356.
Effect of Small Dose of Penicillin on Diagnosis of Early Syphilis. G. F. Baier and J. A. Pincus.—p. 359.
Novocaine Iontophoresis for Painful Limitation of Motion. W. J. Snow and H. Kraus.—p. 360.
Gynecomastia in the Navy. G. V. Webster.—p. 375.
Treatment of Fractures of Adult Femur. V. L. Hart.—p. 379.
Military Considerations of Mental Deficiency. R. J. Lewinski.—p. 385.
Nutritional Evaluation of Overseas Ration. G. H. Berryman, C. R. Henderson, C. E. French and P. E. Howe.—p. 391.
Pilonidal Cysts: Observations on Their Surgical Treatment and Post operative Convalescence. M. H. Sawyer and D. H. Kast.—p. 398.
Nicola Procedure for Recurrent Dislocation of Shoulder. W. F. Stanek and H. C. Andre.—p. 402.
Diagnosis of Meningococcal Infections: Use of Material from Skin Lesions. W. G. Bernhard and A. C. Jordan.—p. 405.
*Health Hazards Associated with the Welding Process. R. W. Quinn.—p. 410.
*Biologic False Positive Serologic Blood Tests Following Stimulating Dose of Tetanus Toxoid. L. L. Heimoff.—p. 419.

Health Hazards in Welding.—Quinn reports that 6 members of a light cruiser became suddenly ill. A common prodromal symptom was a sweetish taste for an hour or more preceding a severe substernal pain. This pain was followed or accompanied by general malaise, a severe chill, nausea and vomiting, and great weakness. The temperature rose from 2 to 5 degrees F. In 3 of the patients there was evidence of respiratory embarrassment, including dyspnea, cyanosis and orthopnea. In 2 symptoms and signs of acute pulmonary edema appeared, necessitating the administration of oxygen to 1 for several hours. On the following morning the temperature had returned to normal and the men felt much better. There was some remaining substernal soreness, headache and malaise but after a day or two at bed rest they were able to return to duty. The etiology and nature of this disease remained a mystery until it was discovered that the one feature common to all of the cases was a history of exposure to welding fumes on the day of onset of their illness. Each of these men had been exposed to a high concentration of welding fumes for at least a four hour watch in compartments where there was no ventilation. Questioning of the yard workers who were doing the welding revealed that it was caused by fumes resulting from galvanized metal welding and could be prevented by drinking a pint or a quart of milk. Classic metal fume fever is believed to be caused by inhaling tiny metal particles in the form of metallic oxides. Breathing nitrous gases which also are formed in the welding arc may produce a much more serious disease in the form of acute pulmonary edema, pneumonia or bronchitis. Deaths have been reported from this cause. Other injuries which may occur in welding are an acute form of keratoconjunctivitis, burns and electric shock. X-ray changes may occur in the lungs which closely resemble those of silicosis; however, there does not seem to be any change of function associated with these changes even after twenty years of welding. Conscientious observance of safety precautions will prevent accidents. The treatment of metal fume fever is purely symptomatic. Acute pulmonary edema may be a real emergency.

False Positive Serologic Tests Following Dose of Tetanus Toxoid.—Heimoff directs attention to the increased frequency with which false positive serologic reactions for syphilis are encountered. The author has recently had under observation 8 cases with biologic false positive serologic reactions. These cases were interesting in that the only common factor to all of them was that recently a stimulating dose of tetanus toxoid had been administered. The 8 cases cited should

give medical officers cause for delay before starting antisyphilitic treatment merely on the basis of one or two positive Kahn tests. It will be noted that the Wassermann reaction remains either negative or doubtful in all of these false positive reactions. Whether this is due to a truer specificity of the Wassermann test or to a lack of sensitivity in this test, the desirability for having confirmatory Wassermann tests along with a positive Kahn test should be self evident. The author emphasizes that in persons with negative clinical findings, negative history and positive Kahn tests careful questioning as to recent immunization procedures or febrile conditions may give the clue to the cause for the positive serologic test.

New Jersey Medical Society Journal, Trenton

41:361-394 (Oct.) 1944

- Gastrointestinal Problems in Army. J. E. Berk.—p. 365.
Adoption—Law and Physician. Ellen C. Potter.—p. 371.
Therapy of Arthritis. H. H. Tillis.—p. 374.
Social Problems in Obstetrics and Gynecology: Maternal Welfare Article Number 87. A. F. Guttmacher.—p. 377.

41:395-426 (Nov.) 1944

- Massive Edema in an Acute Systemic Disease Resembling Disseminated Lupus Erythematosus Syndrome. H. A. Christian and M. M. Rubin.—p. 398.
Waterhouse-Friderichsen Syndrome. J. G. Kaufman.—p. 400.
Bronchogenic Carcinoma. T. G. Schnabel.—p. 402.
Fallacy of Massage in Treatment of Obesity. S. W. Kalb.—p. 406.

Ohio State Medical Journal, Columbus

40:1035-1063 (Nov.) 1944

- Prevention of Industrial Dermatoses. C. Leggo.—p. 1035.
Disqualifying Pulmonary Defects in 100,000 Selectees Examined Radiographically by Armed Forces Induction Station. M. W. Seymour.—p. 1041.
Intestinal Parasitism in Cleveland City Hospital, 1939-1944. W. D. Davis and R. W. Scott.—p. 1046.
Neurotic Reactions in Soldiers. J. Fetterman.—p. 1051.
Severe Toxicity and Death Caused by Sulfathiazole: Case Report and Necropsy Findings. C. F. Vilter and J. M. Schenker.—p. 1057.
Bitter Pen. H. Dietrick.—p. 1062.

Radiology, Syracuse, N. Y.

43:425-530 (Nov.) 1944

- Diagnostic Roentgenology in Army General Hospital During Present War. J. C. Bell and G. W. Heublein.—p. 425.
Intraocular Calcium Shadows: Choroid Ossification. F. G. Kautz and I. Schwartz.—p. 486.
*Value of Axial Projection of Petrous Bone in Diagnosis of Chronic Mastoiditis and Cholesteatoma. G. Danelius.—p. 492.
Photofluorography for Chest Surveys. M. W. Mason.—p. 499.

Axial Projection of Petrous Bone in Chronic Mastoiditis.—According to Danelius the pathologic process of chronic mastoiditis is most frequently established within or near the mastoid antrum and tympanic cavity. Good roentgenographic demonstration of these structures is of paramount importance, but it is rarely if ever obtained by means of the routine projections. Recently the cranially eccentric base views of Steward and Chamberlain-Towne have been recommended for problems concerning the mastoid antrum. In the author's experience, however, these do not display the wealth of detail and convincing clarity of the projection described some twenty-odd years ago by Mayer of Vienna. This view is technically difficult and intricate and the distortion of the temporal bone, with the exception of the antrum, tympanic cavity, external auditory meatus and venous sinus, is considerable. Moreover, Mayer's instructions for placing the patient and arranging the tube and film cassette are difficult to follow. The author describes the positioning of the patient and the arrangement of tube and cassette. He describes and illustrates the anatomic and technical features of the axial projection of the petrous bone. On the basis of cases corroborated by operation, he illustrates the different types and degrees of chronic inflammatory changes at the mastoid antrum. There are several important limitations in diagnostic interpretation: 1. Roentgenographic differentiation of an undeveloped, diploic, not diseased mastoid from a chronic sclerosing mastoid without antrum enlargement is not possible on purely roentgenologic criteria. 2. A cholesteatoma which has attained a considerable size is easily diagnosed as such during the quiescent stage by its smooth, regular borderline. During an acute exacerbation this distinct borderline becomes dissolved and blurred, thus making

a differentiation between a granulomatous, purulent enlarged antrum and a cholesteatoma in the stage of acute exacerbation impossible. 3. A postoperative defect may at times present an appearance similar to that of cholesteatoma. In typical cases, however, the roentgenologic aspects are such that the roentgenologist can stand his ground even if the otologist should at first be of a contrary opinion.

Review of Gastroenterology, New York

11:291-362 (Sept.-Oct.) 1944

- General Presentation of Some Recent Advances in Gastroenterology. A. Bassler.—p. 311.
Clinical Studies on Berry of Sorbus Aucuparia: Its Effect on Plasma Prothrombin, on Volume and Cholic Acid Content of Bile, and on Glucose Tolerance Mechanism. C. J. DeLor and J. W. Means.—p. 319.
Gastroscopic Preparation with Demerol Hydrochloride. A. R. Hufford.—p. 328.
Classification of Diarrheas. L. Pelnec.—p. 332.

Virginia Medical Monthly, Richmond

71:553-602 (Nov.) 1944

- Physicians, Wake Up! C. B. Bowyer.—p. 557.
Recent Advances in Electrocardiography: Earlier Objective Diagnosis of Angina Pectoris. J. M. Bryant and J. E. Wood Jr.—p. 562.
Histaminic Cephalgia with Specific Therapy. W. H. Higgins.—p. 578.
Tuberculosis in the Aged. C. L. Harrell.—p. 579.
Medical Progress During Last Sixty Years. M. O. Burke.—p. 584.
Care of Preschool Children of War Working Mothers—Health Department Study of Their Physical Conditions. W. Y. Garrett.—p. 588.
Are Solutions of Sulfa Drugs Self Sterilizing? F. J. von Gutfeld.—p. 589.
*Rocky Mountain Spotted Fever—Clinical Report. H. S. Fletcher and J. P. Lynch.—p. 591.

Rocky Mountain Spotted Fever.—Fletcher and Lynch report a case of Rocky Mountain spotted fever in a girl aged 2½ years. On the day after admission, intramuscular injections of penicillin were begun, 5,000 Oxford units being given every hour for five days until a total of 200,000 units had been given. The temperature during all this time averaged 102 F. and returned to normal with complete recovery nineteen days after the onset or eleven days after the beginning of penicillin treatment. Penicillin apparently had no effect on the course of the disease.

War Medicine, Chicago

6:217-282 (Oct.) 1944

- Problems of Naval Psychiatry. F. J. Braceland and H. P. Rome.—p. 217.
*Etiology and Pathogenesis of Neurocirculatory Asthenia: I. Hyperthermia as One of Manifestations of Neurocirculatory Asthenia. M. Friedman.—p. 221.
Effect of Sulfonamide Drugs on Experimental Gunshot Wounds of Peripheral Nerves. L. Davis, G. Perret and W. Carroll.—p. 228.
Immunity to Diphtheria in Army Personnel. S. Karelitz and R. E. Moloshok.—p. 232.
Use of Industrial Incentives in War Production of Medical Material. E. R. Eaton.—p. 236.
*Physiologic Effects of Drinking Undiluted Sea Water. J. R. Elkinton and A. W. Winkler.—p. 241.
*Bacillary Dysentery. H. M. Hurevitz.—p. 247.
Mediastinal Emphysema Resulting from Exposure to Pulmonary Irritant. R. W. Monto and P. S. Woodall.—p. 251.
Simple and Rapid Methods of Destroying Crab Lice: Report of Its Use in 12 Cases in South Pacific. D. O'Donnell.—p. 253.

Hyperthermia as Manifestation of Neurocirculatory Asthenia.—Friedman attempted to determine (1) the frequency, nature and identifying characteristics of hyperthermia frequently found in neurocirculatory asthenia and (2) the effect of various agents and stimuli on the temperature of such hyperthermic patients. His studies were made on 30 soldiers of an average age of 26 years who manifested symptoms of neurocirculatory asthenia. The diagnosis was made when symptoms of fatigue, dyspnea on slight exertion, palpitation and precordial pain were experienced by a patient who, in addition, exhibited signs of a neurovascular disorder (facial flush, cold, wet hands, labile pulse, dermatographism, tremor of outstretched hands and inability to refrain from respiration for over thirty-five seconds) but no indications of organic disease. A patient with the syndrome of neurocirculatory asthenia was considered hyperthermic if his oral temperature was found to be 99.2 F. or above on more than three occasions during ten days of observation. Eleven of the 30 patients were found to exhibit an episodic type of fever accompanied by moderate tachycardia, increased tremor, local-

ized perspiration and coldness of the skin of the extremities. Despite extensive clinical, laboratory and roentgenographic investigations, no evidence of infection was found in any of the hyperthermic patients. The character of the fever was found to differ in certain respects from that of fever observed in patients with a typical chronic infectious process. The hyperthermic patients also exhibited during their febrile periods significantly different clinical conditions than those usually found in febrile patients suffering from chronic infectious disease. Epinephrine hydrochloride, amphetamine sulfate, citrated caffeine, typhoid vaccine and psychic stimuli were found capable of inducing elevations of temperature in these patients during normally afebrile periods. No sedative, however, was found which was capable of preventing or reducing their febrile reactions. The fever with its accompanying signs observed in these patients is thought to result from abnormal activity of the hypothalamus.

Physiologic Effects of Drinking Undiluted Sea Water.

—Elkinton and Winkler cite cases of shipwrecked persons who died after drinking undiluted sea water. The mind was usually affected, and suicidal attempts were common. The clinical syndrome following the ingestion of undiluted sea water is one in which disturbances of the central nervous system predominate. Modern views seek to relate the ill effects of the drinking of sea water to its hypertonicity, it being a salt solution with an average concentration of 3.5 per cent. Experiments with human and animal subjects following the ingestion of hypertonic saline solution suggest a reasonable tentative explanation of the deleterious and ultimately fatal effects of this procedure. Persons deprived of fresh water can drink little if any sea water without becoming further dehydrated. This dehydration at first affects both intracellular and extracellular fluid. With persistent drinking of sea water dehydration of the cells progresses much more rapidly than does that of the extracellular space, the volume of which is maintained by the retention of sodium chloride. Ultimately extreme intracellular dehydration produces disturbances of the nervous system with terminal respiratory failure, while the absence of extracellular depletion permits the circulation to function adequately until the end. It has been urged that castaways emulate seals, which do not drink sea water but meet their water requirements entirely from the body fluids of fish. The extensive promotion of this emergency measure has far outstripped its experimental investigation. While entirely reasonable from the point of view of salt excretion, since concentration of salt in the body fluids of fish is nearly isotonic, it ignores the fact that much urea is formed from the protein of fish and that this urea requires extra water for its excretion. Ingestion of fish does not ameliorate dehydration in human beings, since all the water in the fish is required for the excretion of the urea. Seals, like dogs, presumably can excrete the urea with a smaller volume of water and can so retain some of the water for other purposes.

Bacillary Dysentery.—Hurevitz shows that in this as in other wars bacillary dysentery is one of the most significant causes for disability among soldiers. He presents an analysis of the cases of 1,120 soldiers who were admitted to an overseas station hospital with the diagnosis of diarrhea or dysentery during the period between May 1 and November 1. Five hundred and eighty-seven had stool cultures positive for dysentery bacilli, of which 409, or 69.8 per cent, were positive for *Shigella* paradyserteriae. The symptoms ranged from extremely mild manifestations to severe toxemia. Treatment in all cases was carried out with either sulfaguanidine or sulfadiazine. Special emphasis was placed on adequate fluid intake and nursing care. All patients recovered from the dysentery infection. One patient died, but at necropsy he was found to have had bacterial endocarditis with old rheumatic aortic and mitral lesions.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

52:455-490 (Nov.) 1944

- Report of Thirty Causes of Benign Menopausal Bleeding. W. J. Reich, Helen Button and M. J. Nechtow.—p. 455.
Histologically Benign Thyroid Tumors Producing Paraplegia and Chyluria. H. A. Tucker.—p. 467.
Summary of Improved Medical and Personnel Procedures for Women in Industry. M. R. Burnell.—p. 470.
Modern Trends in Gastric Surgery Through 1943. D. Metheny.—p. 476.
Review of Recent Advances in Large and Small Bowel Surgery. W. R. Hutchinson.—p. 481.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

17:291-322 (Oct.) 1944

- X-Ray Diagnosis in Gunshot Wounds of the Abdominal Cavity and Its Significance in Field Surgery. S. A. Reinberg.—p. 291.
Four Primarily Radiologic Lesions Found in Traumatic Chest Cases: Preliminary Report. C. J. Hodson.—p. 296.
Linear Radium Source Dose Calculators. L. A. W. Kemp.—p. 300.
Osteochondritis of Patella. H. Jungmann.—p. 305.
Investigation of Sciatica and Lumbago—Radiologic Aspect. J. F. Brailsford.—p. 308.
Case of Patent Ductus Arteriosus Associated with Multiple Pulmonary Aneurysms and Infective Endocarditis. H. R. Holmes.—p. 312.
Localization of Foreign Bodies by Radiometric Method. W. H. Hastings.—p. 316.
Tomographic Appearance of Azygos Lobe, with Description of 2 Cases and Report of 7 Cases. J. H. Crawford.—p. 319.

British Medical Journal, London

2:459-488 (Oct. 7) 1944

- Surgery in Tunisia, November 1942 to May 1943. J. M. Weddell.—p. 459.
Investigation and Treatment of Enuresis in Army: Preliminary Report on 277 Cases. P. L. Backus and G. S. Mansell.—p. 462.
Postoperative Chest Complications in Gastric Surgery. T. W. Minpriss and F. G. Etheridge.—p. 466.
Two Varieties of Leukemia in One Family. R. W. Meikle.—p. 468.
Superficial Gangrene in Adolescent Diabetes. H. Whittaker.—p. 469.

Medical Journal of Australia, Sydney

2:325-348 (Sept. 23) 1944

- Control of Tuberculosis. D. L. Anderson.—p. 325.
Insomnia. L. Hughes.—p. 330.
Insomnia. S. E. Jones.—p. 332.
Tropical Anidrotic Asthenia: Preliminary Report. S. D. Allen and J. P. O'Brien.—p. 335.
Examination of Public Health Regulation Governing Scarlet Fever. R. J. Jackson.—p. 337.

Insomnia.—According to Jones, insomnia is the symptom most frequently complained of by patients with nervous and mental disorders. Sleeplessness often precedes the appearance of other signs of nervous or mental disorder, and in young persons prolonged insomnia should arouse suspicion that a psychoneurosis or psychosis is imminent. The majority of patients with insomnia suffer no physical reaction to prolonged sleeplessness. Little sleep is required to remove the effects of fatigue and to maintain life. There are two kinds of sleep, one being physiologic and essential for the maintenance of life and the other being psychologic and its amount being determined by habit and custom. Psychic reactions to sleeplessness are not the direct result of lack of sleep but represent the patient's emotional response to deprivation of a customary mode of escape. The secondary psychic results of insomnia are irritability, inability to concentrate, loss of interest and depression. Like other neurotic symptoms, insomnia may have value to the patient as an alibi for the evasion of duties or responsibilities. In most neuroses and in anxiety states, sleep is inhibited by patients' filling their minds with emotional thoughts, by worries and by preoccupation with the idea of inability to sleep. Sleep is delayed by grief and worries, by fear and by anxious expectation. Total or absolute insomnia is rare in the neuroses. It is seen in the psychoses, in acute mania and melancholia and in toxic and confusional states. In neurasthenia, patients experience difficulty in getting to sleep and often awake suddenly, sweating and trembling. In hypochondriasis sleeplessness sometimes constitutes the focus of fixation of the patient's interest. Persistent insomnia is sometimes indicative of simple depression (melancholia). The essential preliminary to treatment is a careful estimation of physical and psychologic factors that have a bearing. The first essential in psychotherapy is persuading the patient to adopt a correct mental attitude to his sleeplessness; his mind must be disabused of the common belief that lack of sleep is followed by grave consequences. Nervous patients should not retire too early and should avoid sleeping during the daytime. They must learn to abandon their mental activities when they retire. Heavy meals and stimulating drinks should be avoided before retiring. When insomnia is absolute,

as in acute mania, delirium tremens or confusional psychoses, there is a temptation to use dangerous doses of powerful hypnotics. It is, however, better to repeat safe dosage than to give larger initial doses. The barbiturates represent the most useful class of hypnotic drugs; they are well tolerated, act rapidly, leave little "hangover" and have little habit forming tendency. It will be found desirable to change the drug from time to time.

Wiener medizinische Wochenschrift, Vienna

93:77-94 (Jan. 30) 1943. Partial Index

- Evaluation of Patients' Ability to Stand Surgical Intervention. E. Novák.—p. 77.
*Treatment for Ophthalmic Headache with Procaine Hydrochloride Infiltration of Greater Occipital Nerves. V. Papilian, I. G. Russu and I. Pacurariu.—p. 82.
Ear Complications in Leiner's Disease. G. Fabinyi.—p. 83.

Procaine Infiltration of Greater Occipital Nerves in Ophthalmic Cephalalgia.—Papilian and his associates report 5 cases of severe headache resulting from diseases of the eye, particularly of the glaucoma type, in patients between the ages of 29 and 70 years. Procaine hydrochloride infiltration of the two great occipital nerves was performed, 15 cc. of 1.2 per cent solution of the drug being injected into each nerve. Relief resulted within a few hours and the severe headache disappeared completely within twenty-four hours in 4 of the cases in which hemicrania was associated with subacute iridocyclitis, contusion of the eyeball and subluxation of the crystalline lens and with leukoma adherens and secondary glaucoma. The headache recurred within forty-eight hours in 1 case of left hemicrania associated with leukoma adherens and painful secondary glaucoma of the left eye. Procaine hydrochloride infiltration was repeated and the headache disappeared. The analgesia continued, and the patients were dismissed on their own request but warned to return to the hospital if the headache recurred. The therapeutic results of the anesthesia of the large occipital nerves were the same in all the cases although they differed anatomically. The pain disappeared but its cause was not removed. A definite tendency to recovery was observed and may be explained by the disappearance of the irritative pain factor.

Khirurgiya, Moscow

1:3-39, 1944. Partial Index

- Gunshot Wounds of Joints: Their Treatment. V. S. Levit.—p. 3.
Pathologic Anatomy of Gunshot Wounds of Knee Joint. P. P. Dvishkov.—p. 8.
*Treatment of Gunshot Wounds of Large Joints. E. K. Molodaya.—p. 12.
Resection of Joints After Gunshot Wounds. A. T. Lidskiy.—p. 21.
Gunshot Wounds of Elbow Joint. A. T. Makhovina.—p. 27.
Gunshot Coxitis. M. O. Fridland.—p. 32.

Treatment of Gunshot Wounds of Large Joints.—Molodaya reports 923 cases of gunshot wounds of the larger joints treated in an evacuation hospital. There were 472 instances of gunshot injuries of the knee joint, of which 290 (61 per cent) were treated conservatively. In all, 182 operations were done. The postoperative mortality amounted to 3.8 per cent, while the general mortality amounted to 1.4 per cent. The conservative treatment of knee joints consisted of a circular plaster of paris cast with inclusion of the pelvis. To prevent atrophy of the muscles and contractures the cast was removed in from ten to fourteen days and therapeutic exercises were practiced. Resection of the knee joint without drainage was found to be the operation of choice for gunshot wounds of the knee joint complicated by fractures and osteomyelitis. Ollier's subperiosteal resection resulted, as a rule, in regeneration of bone from the periosteum and in elongation of the femur. Early resection or disarticulation is indicated in gunshot injuries of the hip joint in the majority of instances. Prophylaxis of postoperative shock consists in substitution of local anesthesia for general narcosis, preliminary ligation of the femoral artery and transfusion of large amounts of blood into the femoral vein at the beginning and at the end of the operation. The best treatment for gunshot wounds of the elbow joint complicated by fractures is early subperiosteal resection with early therapeutic exercises.

Book Notices

Lecturas on the Kidney. By Homer W. Smith, A.B., Sc.D., M.S., Professor of Physiology and Chairman of the Physiology Laboratories, New York University College of Medicine, New York. Porter Lectures Series IX. Delivered at the University of Kansas School of Medicine, Lawrence, Kansas City. The William Henry Welch Lectures Delivered at the Mount Sinai Hospital, New York City. Cloth. Price, \$1. Pp. 134, with 13 illustrations. Lawrence, Kansas: University Extension Division, University of Kansas, 1943.

In this book are brought together the three Porter Lectures given in 1939 and the two William Henry Welch Lectures delivered in 1943 by Dr. Homer W. Smith. The first lecture, on the "Evolution of the Kidney," is a fascinating story of the accommodation of the kidney, in both structure and function, to the changing conditions of successive geological revolutions, periods and eras. Inherent in this story are the teleological reasonings and imaginative explanations so necessary to fill in the gaps where evidence is lacking. One of the conclusions reached is that in structure and function the human kidney differs only in details from that of the dog and some other animals and that its closest analogue in function is in the kidney of the great apes. Although much about renal function in general has been learned from studies on the frog, yet the results of those made on the dog are more directly applicable to the problem of renal function in man. This lecture provides a good introduction to the lectures that follow. The remaining four lectures, which deal in great part with the studies of Homer Smith and his collaborators, show how much more can be learned about renal function in man from direct observations on man. The lecture on "Renal Physiology Between Two Wars" gives the more immediate background for these studies, which involved the development of special methods for the estimation of renal function in health and disease and especially in the hypertensive state. The author and his collaborators, not content with the mere estimation of total renal function, devised methods whereby they were able to determine, at least approximately, the amount of blood flow through the kidneys and the part played by filtration through the glomeruli and excretion and reabsorption through the tubules in the final production of urine. The last three lectures give the results of these studies in considerable detail and cannot be summarized in a review of this kind. It is necessary to read the publications and become familiar with the newer methods and terminology in order to be able to evaluate the results of these studies and the conclusions reached. The book gives the reader the information necessary to familiarize him with the large series of publications which these lectures represent.

Speech Reading—Jena Method: A Textbook with Lesson Plans in Full Development for Hard-of-Hearing Adults and Discussion of Adaptations for Deaf and Hard-of-Hearing Children. By Anna M. Bunker, Instructor of Speech Reading, Department of Special Education, Michigan State Normal College, Ypsilanti, Michigan. Revised edition. Cloth. Price, \$2.50. Pp. 136. Danville, Illinois: The Interstate, 1944.

The title of this textbook may be puzzling to the uninitiated. It is a synonym for what is more commonly termed "lip reading." The book is a revised edition of mimeographed material published in 1932 by Miss Bunker and Miss Bessie L. Whitaker, both of Michigan State Normal College at Ypsilanti, Mich. The general format and presentation of material follow the theories developed at Jena, Germany, by the late Dr. Karl Brauckmann. These theories have been developed and tested over a period of some twelve years by Miss Bunker and her associates. Miss Bunker points out that "listening has been too long . . . considered a purely auditory affair" and that the progressive teacher of speech reading should emphasize the aspects of "sharp observation" and hearer-responsiveness to the spoken word. For this reason, she feels that her book presents material valuable to all students of oral communication.

Lesson plans are mapped out to develop kinesthetic awareness of speech movements and ability to imitate the speaker, to stress development of syllable drills (including word, phrase and sentence series) and to develop a sense of rhythmic coordination of the spoken and the auditory process.

There is much excellent material in the book, but it suffers from a confusing presentation and a paucity of explanation. To cite one example, the author uses several symbols to indicate various rhythmic patterns but nowhere explains the respective

significations of the symbols; in consequence, the reader is forced to puzzle them out for himself. Adding to the confusion is the fact that, although the book is written in the third person, the author frequently shifts to the role of the speech reading teacher giving instructions to her pupils. There are no quotation marks or variations in typography to indicate the shift to direct conversation. Despite these criticisms, Miss Bunker's textbook should be valuable to those who teach lip reading. In addition to a series of suggested lesson plans, it contains a list of words most commonly used, a brief index and a helpful bibliography.

Theory of Occupational Therapy. By Norah A. Haworth, M.A., M.R.C.S., L.R.C.P., Assistant Medical Officer, London Passenger Transport Board, and E. Mary MacDonald, Principal, Dorset House School of Occupational Therapy, Barnsley Hall Emergency Hospital, Broomsgrove. With foreword by Sir Robert Stanton Woods, M.D., F.R.C.P., Consultant Adviser in Physical Medicine to the Ministry of Health. Second edition. Fabrikoid. Price, \$2.50. Pp. 148, with 68 illustrations. Baltimore: William Wood & Company, 1944.

The authors include in occupational therapy "any work or recreational activity, mental or physical, definitely prescribed and guided, for the distinct purpose of contributing to and hastening recovery from disease and injury." The relationship of occupational therapy to other forms of physical medicine is clearly stated in the preface by Sir Robert Stanton Woods, consultant adviser in physical medicine to the Ministry of Health in London.

This book was written primarily for students and nurses. Its elementary character and brevity preclude its use as a textbook, but prospective students will find it very helpful. It is also an excellent introduction for the many physicians in America who are beginning to become interested in occupational therapy. Throughout the book there are many practical applications of this form of treatment for patients in general hospitals, tuberculosis sanatoriums and mental wards.

The book, written and printed in England, contains chapters on training, bibliography and finance that are not pertinent to conditions in the United States. Furthermore, educational programs in America include a greater amount of training and more careful standardization and accrediting. Nevertheless the chapters on equipment, apparatus and materials and records and prescriptions are quite valuable.

Physiology in Health and Disease. By Carl J. Wiggers, M.D., D.Sc., F.A.C.P., Professor of Physiology and Director of Physiology Department in the School of Medicine of Western Reserve University, Cleveland, Ohio. Fourth edition. Cloth. Price, \$10. Pp. 1,174, with 247 illustrations. Philadelphia: Lea & Febiger, 1944.

Much recent progress in physiology has been due to the special studies associated with war problems. This edition has recognized that fact and has added or revised its discussions of nerve degeneration, eye fatigue, color appreciation, camouflage, dark adaptation, auditory efficiency, somatic and visceral pain, auditory efficiency, principles of transfusion, blood substitutes, hemorrhage and shock, artificial respiration, dietary deficiencies, physical fitness and fatigue, water deprivation, acclimatization, altitude, air and seasickness and other sections as well. Approximately one third of the text has been completely rewritten, and other sections have been significantly altered. It is consequently apparent to how great a degree the knowledge of this fundamental science has been subject to recent change and how successful the author is in keeping this authoritative textbook abreast of advances in the field.

The Gastro-Intestinal Tract: A Handbook of Roentgen Diagnosis. By Fred Jenner Hodges, B.S., M.D., Professor of Roentgenology, University of Michigan Medical School, Ann Arbor, Michigan. Cloth. Price, \$5.50. Pp. 320, with illustrations. Chicago: Year Book Publishers, Inc., 1944.

The author has contrived to put into this little handbook a readable and comprehensive discussion of gastrointestinal radiology. The illustrations are exceptionally well done and are grouped in such a way that several roentgenograms illustrative of an individual case are presented side by side on the same page, thus facilitating comparison. The reader is made to appreciate that in the gastrointestinal tract fluoroscopy is an important adjunct of the x-ray examination, offering as one of its chief advantages the opportunity to make "aimed" roentgenograms, sometimes spoken of as "spot films." The author and the publisher have succeeded admirably in the production of a useful handbook covering the digestive tube and the biliary tract.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

HIBERNATION

To the Editor:—Will you please send me information on the physiology and pathology of hibernating animals during the period of hibernation. Particularly I should like to know if there is consumption of tissue other than fat to maintain life during the starving of hibernation. Are there pathologic changes following hibernation? It would seem that the normal maintenance of life would require the consumption of all three essentials of normal diet, fats, proteins and sugar or starch. Does sclerosis occur during hibernation, and is it of the fibrils or calcium replacement type or a degree of both?

A. J. Alcorn, M.D., Chicago.

ANSWER.—Hibernation is the ability of certain homoiothermal (warm blooded) animals, deprived of food and exposed to the cold, to revert to the poikilothermal (cold blooded) state, thus making their supply of fuel (fat) last through the winter season. Their metabolism is, in the main, that of starving nonhibernating animals, accentuated by the depressing effect of low temperature on all body functions. The respiratory quotient during hibernation is even lower than in ordinary starvation, suggesting that fat is the principal if not the only source of energy. The blood sugar is said to be lower than normal, with insulin injections favoring the onset of hibernation. There is a drop in total phosphorus and in acid insoluble phosphorus in the blood, as well as an increase in the potassium-calcium ratio. A liberal supply of vitamin D was found to hinder hibernation.

Adrenalectomy, as rapidly fatal to hibernating animals as to other mammals during the summer season, has no effect during hibernation. Other changes in the endocrine glands have been reported, including the presence of certain substances in the "brown fatty tissue," known as the interscapular or hibernating gland. Extracts prepared from that tissue, removed from a hibernating hedgehog, when injected into rats led to a state of depression and a drop of 20 to 30 per cent in the basal metabolic rate.

No disease appears to follow hibernation, but there is a pronounced hypertrophy of the hypophysis, probably related to the effect of light and responsible for ushering in the spring breeding season.

POTASSIUM BITARTRATE AS POWDER FOR SURGEONS' GLOVES

To the Editor:—Recently there appeared in The Journal an article to the effect that talcum powder should be abandoned as an agent for keeping surgeons' gloves dry. In its place, cream of tartar was advocated. This latter has been utilized in our hospital for some time and has proved to be unsatisfactory because of its caking qualities. Would it not be wise to offer some suggestion as to how these caking qualities may be obviated?

M.D., Connecticut.

ANSWER.—The St. Louis Barnard Skin and Cancer Hospital workers report that they carried out a large series of experiments on the caking properties of potassium bitartrate and found, without exception, that caking did not occur when the powder was sterilized for not more than fifteen minutes at not more than 15 pounds of steam pressure. It may show a tendency toward clumping, but if sachets are used the clumps are readily broken by finger pressure. If, on the other hand, powder shakers are used, mere agitation of the shakers will break up the clumps. These same workers announce that within a reasonable time they hope to see on the market a new process starch powder that does not gel on autoclaving, that is somewhat smoother than the bitartrate and that may prove to be a cheaper product.

ROTARY NYSTAGMUS

To the Editor:—I would appreciate information about the significance of the isolated finding of rotary nystagmus. A Negro woman aged 42 suffers from a recurrent pyelitis. During a routine examination the rotary nystagmus was discovered. The patient herself maintained that she has never been aware of its presence, but inquiry from relatives makes it likely that this nystagmus has been present at least since high school days. That this nystagmus was present entirely within normal limits except for the nystagmus. There is no history of syphilis, and the Wassermann reaction is normal.

M.D., California.

ANSWER.—Rotary nystagmus may be congenital. It also occurs in cases of poor or defective visual acuity and in ocular muscular weakness. It is seen in acute lesions of the internal ear. It is not a sign of organic disease of the central nervous system.

TRANSPLANTATION OF URETERS FOR EXSTROPHY OF BLADDER

To the Editor:—Is not the transplantation of the ureters the best procedure in exstrophy (atrophy) of the bladder? If any one has had success with plastic operations, please refer me to the articles in the literature. My patient is 15 years of age. The vaginal orifice is at the normal site of the symphysis pubis, which does not appear to be present. The ureteral openings are visible but to date there has been no ascending infection.

D. Guilford Dudley, M.D., Endicott, N. Y.

ANSWER.—Exstrophy of the bladder is best treated by transplantation of the ureters into the sigmoid with subsequent removal of the bladder tissue. The method of inserting the ureters into the bowel most frequently used is that suggested by Coffey with modifications by Dr. C. H. Mayo. Some surgeons transplant the two ureters at the same time. The success of this operation in suitable subjects and in young children has been most encouraging. It is stated that there has been no ascending infection in this patient, in spite of the fact that the ureters are visible. This is a peculiarity of this condition in that ascending infection apparently is prevented by nature's valvelike mechanism in the lower ureter with the aid of ureteral peristalsis.

It would be advisable to make an excretory urogram before operation in order to determine the comparative function of the kidneys and the presence of any dilatation in either ureter or pelvis. The symphysis pubis is usually absent in most children with exstrophy of the bladder. Results of this type of operation are well exemplified in articles by Walters and Braasch (*Am. J. Surg.* 23:255 [Feb.] 1934) and by Higgins (Transplantation of Ureters into the Rectosigmoid in Infants, *J. Urol.* 50:657 [Dec.] 1943).

HYPERSENSITIVE NASAL MUCOSA

To the Editor:—A man aged 55 complains of a hypersensitive nose, which at times discharges a large amount of thin mucus. This occurs regularly and profusely at meal times and may occur any time during the day. Under normal conditions the nasal membranes appear slightly pale, the turbinates are normal, the septum is normal and the large sinuses are normal. He does not sneeze, and the nose is never stuffy. I believe that this is a nerve irritation and is in some way connected with the innervation of the salivary glands. I have cauterized the turbinates with no improvement. I should like advice as to treatment.

Carl C. Cowlin, M.D., Hollywood, Calif.

ANSWER.—Sneezing, rhinorrhea and nasal blocking are the common symptoms of the hypersensitive nose. It is not necessary for all of these manifestations to be present; one or two may predominate or even be the sole manifestation. Thus we find some people in whom sneezing is a predominant symptom, others in whom blocking of the nasal passages may be the only manifestation, while in still others a profuse rhinorrhea is a sign of the hyperesthetic rhinitis. The patient under question apparently falls in this group. The diagnosis could be corroborated still further by the finding of eosinophils in the nasal smear. It would be wise to regard a patient like this as allergic until proved otherwise. A serious attempt should be made to make an etiologic diagnosis by means of skin tests. If these do not yield results, restricted diets should be tried with a view to determining a food allergy.

DIABETES AND IMPOTENCE

To the Editor:—Have any instances of impotence or diminished sexual desire been observed in man receiving prolonged and high doses of insulin? Is such a condition at all probable?

M.D., California.

ANSWER.—Obviously one sees impotence and diminished sexual desire in man receiving prolonged and high doses of insulin, because prior to the introduction of insulin the average age of diabetic patients was 44 years at death and now is 65 years. If anything, adequate control of the diabetes will improve rather than diminish sexual function. It is true, however, that long continued, poorly controlled diabetes, which implies inadequate use of insulin, may result in impotence in a comparatively young man.

SKIN TESTING FOR ALLERGY

To the Editor:—Can you advise me about the relative values of the patch, scratch and intracutaneous methods of skin testing for allergies? I intend to purchase a new diagnostic set and would appreciate the information.

Allen G. Janecy, M.D., Thief River Falls, Minn.

ANSWER.—The patch, scratch and intracutaneous methods of testing cannot be compared. The patch test is used only for cases of contact dermatitis. The scratch and intracutaneous methods of testing may be compared. Scratch tests will produce positive skin reactions less frequently than intracutaneous tests. They are, however, safer than intracutaneous tests. Intracutaneous tests will produce positive reactions more frequently and are considered more dangerous in the hands of an inexperienced worker than the scratch test technique.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 127, No. 5

CHICAGO, ILLINOIS
COPYRIGHT, 1945, BY AMERICAN MEDICAL ASSOCIATION

FEBRUARY 3, 1945

TREATMENT OF STAPHYLOCOCCIC, PNEUMOCOCCIC, GONOCOCCIC AND OTHER INFECTIONS

WITH PENICILLIN

CARL G. HARFORD, M.D.
SAMUEL P. MARTIN, M.D.
PAUL O. HAGEMAN, M.D.
AND
W. BARRY WOOD JR., M.D.
ST. LOUIS

In June 1942 the Committee on Chemotherapeutic and Other Agents of the National Research Council was requested to organize a cooperative clinical study to evaluate the effectiveness of penicillin in the treatment of bacterial infections. A relatively large group of clinics was asked to participate in the investigation in order that adequate data might be accumulated as rapidly as possible. The preliminary results of the cooperative undertaking have been summarized in a recent publication.¹ The present report deals with a more detailed account of the use of penicillin² in the treatment of 103 patients in this clinic. Our experience with penicillin in the treatment of syphilis will be published elsewhere.

METHODS

Selection of Patients.—In this study preference was given to patients with fulminating bacterial infections, particularly those known to be unresponsive to sulfonamide chemotherapy. Less severe infections were treated in a small group of patients known to be hypersensitive to sulfonamides. Thirteen patients with gonorrhea were treated with penicillin after repeated courses of sulfonamide therapy had failed to influence the infection. In general, patients were not accepted for penicillin therapy until the bacterial origin of the infection had been established by culture. In a few cases treatment was begun before the results of cultures were known, but in each instance there was adequate clinical evidence of a specific bacterial infection.

Administration of Penicillin.—The sodium salt of penicillin (usually containing 300 units or more per milligram) was dissolved in isotonic solution of sodium

chloride in concentrations of 5,000 to 20,000 units per cubic centimeter. Only the amount of penicillin needed for twenty-four hours of treatment was put into solution at one time. All penicillin solutions were kept in the refrigerator between injections. Systemic treatment was accomplished by either intravenous or intramuscular injections. In many instances it was found convenient to inject the penicillin into the rubber tubing of a continuous intravenous drip. The dosage employed varied from 5,000 to 40,000³ units every one, two or four hours, depending on the circumstances. The total number of units of penicillin administered in each case depended on the severity of the infection and the relative susceptibility of the causative bacterium to the drug. Treatment was continued over longer periods when clinical response was slow or recurrence seemed likely.

All accessible infected foci were treated by local injections of penicillin. In such cases systemic therapy was given at the same time. Infected wounds were treated by gauze packs saturated in penicillin solution containing 1,000 units per cubic centimeter. Freshly saturated packs were applied at least once a day. Intrapleural injections of 5,000 to 20,000 units every twenty-four hours were used in the treatment of infections within the pleural space. The usual initial intrathecal dose employed in the treatment of meningitis was 20,000 units in 2 cc. of isotonic solution of sodium chloride. Further intrathecal injections were given each day in decreasing amounts and were continued until all signs of meningitis had subsided.

Other Chemotherapy.—It will be noted in the tables and charts that sulfonamide therapy preceded or followed treatment with penicillin in a number of instances. In some cases the infection had progressed in spite of intensive sulfonamide therapy; in others, sulfonamide drugs had been administered before admittance to the hospital. During the early months of the study, when the supply of penicillin was limited, sulfonamides were given in a few cases after recovery to prevent recurrence of infection. In no instance were sulfonamide drugs and penicillin given at the same time.

Clinical Observations.—All patients treated were admitted either to the Barnes Hospital or to closely affiliated hospitals.⁴ Daily visits were made to each patient during the active phase of the illness and complete records were kept in every case. Patients with gonorrhea were retained in the hospital for thirty days after the completion of therapy in order to avoid the possibility of confusing reinfection with relapse. All patients thus far treated have been included in this report. All fatal cases in which autopsies were per-

From the Department of Internal Medicine, Washington University School of Medicine, the Oscar Johnson Institute for Medical Research, and Barnes Hospital, St. Louis.

1. Keefer, C. S.; Blake, F. G.; Marshall, E. K., Jr.; Lockwood, J. S., and Wood, W. Barry, Jr.: Penicillin in the Treatment of Infections: Statement by the Committee on Chemotherapeutic and Other Agents, Division of Medical Sciences, National Research Council, J. A. M. A. 122:1217-1224 (Aug. 28) 1943.

2. The penicillin was provided by the Office of Scientific Research and Development from supplies assigned by the Committee on Medical Research for clinical investigations recommended by the Committee on Chemotherapeutic and Other Agents of the National Research Council.

3. Proportionately smaller doses were employed in the treatment of infants and small children.

4. St. Louis City Hospital, City Isolation Hospital, St. Louis Children's Hospital and the Jewish Hospital of St. Louis.

formed were studied by Dr. Robert A. Moore of the Department of Pathology and will be reported in a separate publication.

RESULTS

Staphylococcal Infections.—The results of penicillin therapy in the treatment of staphylococcal infections are shown in table 1. There were 16 patients with bacteremia; of these all had metastatic pneumonia and 3 were suffering from bacterial endocarditis. In this entire group of patients only 2 died: 1 with bacterial endocarditis and the other with furunculosis of the face, metastatic pneumonia, cavernous sinus thrombosis and acute pericarditis (cases 13 and 14). In addition there were 4 instances in which cultures of the blood failed to reveal staphylococci but in which clinical evidence left no doubt that bacteremia had previously existed (cases 17, 18, 19 and 20). In the latter group there was but one death. Five patients with acute localized infection without bacteremia (cases 21, 22, 23, 24 and 25) were treated with penicillin, and 1 died. There were 6 patients with acute osteomyelitis, 3 of whom

a stiff neck. When first seen in the hospital, on the eighth day, she was comatose, dyspneic, cyanotic and obviously dehydrated. There were an extensive carbuncle of the face with numerous points of drainage, swelling of the eyelids and severe chemosis. Eyegrounds and external ocular movements were normal, but there was definite trismus. Numerous crepitant and sonorous rales were heard at the base of both lungs. Pleural friction rubs were heard bilaterally, and an x-ray plate of the chest showed many patches of consolidation throughout both pulmonary fields. The liver and spleen were both palpable. There was pronounced stiffness of the neck. The spinal fluid contained 80 cells per cubic millimeter, 40 per cent of which were polymorphonuclear leukocytes. The fluid was sterile. Blood culture revealed 70 colonies of hemolytic *Staphylococcus aureus* per cubic centimeter of blood, and the same organism was isolated from the conjunctiva. There was a leukocytosis of 18,000 and an anemia of 3.88 million red blood cells with 11 Gm. of hemoglobin.

Penicillin was administered as shown in figure 1, and gradual improvement took place. The local lesion subsided; the fever fell by lysis, and the pulmonary infiltration decreased. Cerebrospinal fluid on the fourteenth day of the disease contained 12 cells per cubic millimeter. On the twelfth day of illness a pleural effusion was demonstrated in the right chest. The fluid recovered on thoracentesis was sterile and contained 9,300 cells, 69 per cent of which were polymorphonuclear leukocytes. Penicillin therapy was discontinued on the twenty-fourth day of illness, and nine days later a relapse had occurred, as evidenced by high fever, bacteremia and a pleural effusion in the left chest. Further penicillin treatment⁵ resulted in the patient's prompt recovery.

Summary.—A 26 year old woman with staphylococcal bacteremia, extensive metastatic pulmonary lesions and an aseptic meningitis, all resulting from a widespread carbuncle of the face, responded satisfactorily to penicillin therapy. Nine days after the treatment was discontinued the patient suffered a relapse with bacteremia, but recovered completely after a second course of penicillin.

CASE 2.—History.—F. A., a white man aged 54, was apparently well until four days before being admitted to the hospital, at which time he noticed tenderness, redness and swelling of the nose. On the day before entry he began to have chills and fever, and on the following day he complained of severe chest pains exaggerated by respiration. When first seen at the hospital, the whole right side of his face was swollen, as shown in the photograph in figure 2. There was some swelling on the left side of the face also. Although he was given 3.5 Gm. of sulfamerazine shortly after his admission to the hospital, this form of therapy was soon discontinued and on the second hospital day penicillin treatment was started. During the first twelve hours in the hospital his condition rapidly became worse. The percussion note was found to be impaired over both lung bases, where there were heard widespread crepitant and sonorous rales and bronchial breath sounds. Friction rubs were also heard over both lung bases. A roentgenogram of the chest showed patchy consolidation throughout the right lung and in the left lower lung field. Blood cultures showed hemolytic *Staphylococcus aureus*, and the white blood cell count was 17,800. Therapy with penicillin resulted in the patient's steady clinical improvement, the fever subsiding by lysis. On the seventh day of the disease three points of drainage made their appearance on the nose. The material which drained from these areas contained hemolytic *Staphylococcus aureus*. On the twelfth day of illness the penicillin was given intramuscularly instead of intravenously because of thrombosis at the site of a continuous intravenous injection. On the seventeenth day the signs of a pleural effusion were noted, and 485 cc. of serosanguineous fluid containing hemolytic *Staphylococcus aureus* was removed by thoracentesis. The penicillin was instilled into the pleural cavity at the time of the thoracentesis, and additional intrapleural injections of penicillin were given on the twentieth and twenty-fifth days. Recovery.

had a complicating bacteremia (cases 10, 18 and 19). Surgical operation was carried out in only 3 of these cases. All of the patients were obviously benefited by penicillin therapy, none of them having sustained a recurrence of the infection several months after treatment.

The therapeutic response in chronic osteomyelitis was less encouraging. Four of 7 patients treated were improved, 2 received at least temporary benefit and 1 patient has gone for more than twelve months without drainage from the original sinus.

The following case reports illustrate the effectiveness of penicillin in the treatment of severe staphylococcal infections:

CASE 1.—History.—B. B., a white woman aged 26, "picked a pimple" on her left cheek eight days before entering the hospital. On the following day she had a chill, and the inflammatory process spread over the entire left side of her face. She was treated with cold moist applications to the face and two tablets of a sulfonamide drug every three hours. In spite of this therapy the focal lesion continued to spread and chills continued. On the seventh day of the illness the patient developed

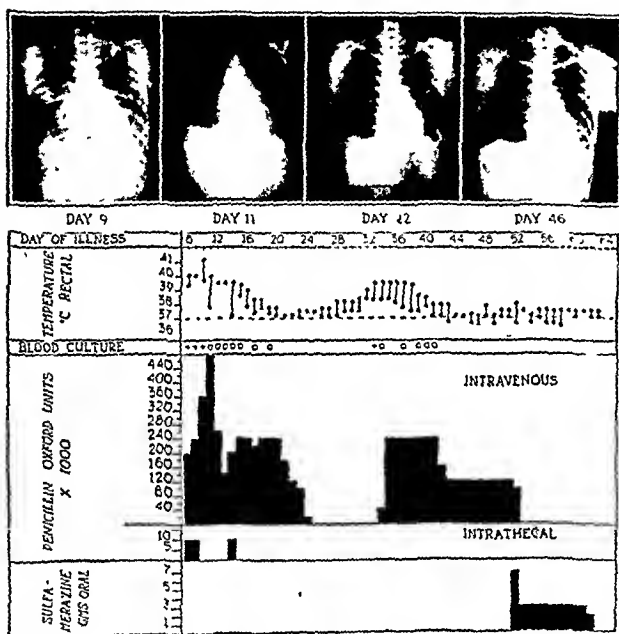


Fig. 1.—Staphylococcal infection, with pulmonary infiltration.

5. On the thirteenth day of illness at the time when the left pleural effusion was demonstrated, 10,000 units of penicillin (not shown in figure 1) were instilled into the pleural cavity.

TABLE 1—*Staphylococcus Infections*

Case No.	Age	Sex	Diagnosis	Blood Culture	Duration of Disease, Days	Penicillin Treatment			Other Specific Treatment	Results †	Comment
						Total Dosage Units × 1,000,000	Days of Therapy	Body Wt., Kg.	Routes of Administration *		
1	26	♀	Carbuncle of face, metastatic pneumonia, empyema	+	8	574	30	38	IV, IT, IP	R	Immunant infection, comatose on entry
2	60	♂	Furuncle of nose; metastatic pneumonia; empyema	+	4	30	20	66	IV, IM, IP	R	Rapid recovery
3	17	♂	Cellulitis of arm and chest; metastatic pneumonia	+	7	410	21	46	IV, IM, IP	R	Immunant and massive infection
4	4	♂	Questionable osteomyelitis of femur; metastatic pneumonia	+	2	0.38	11	17	IV, IM	R	No x-ray evidence of osteomyelitis; organisms recovered from the bone
5	11 wk	♂	Furuncle; metastatic pneumonia	+	9	0.94	7	3.7	IV, IM, IP	R	
6	3 wk	♂	Cellulitis of neck, metastatic pneumonia	+	8	0.187	20	3.1	IV, IP, local	R	Colonies on blood pour plate too numerous to count
7	8	♂	Bacteremia; metastatic pneumonia	+	4	0.88	12	4.4	IV, IT	R	No primary focus found
8	2	♀	Abscess of ankle, pericarditis	+	8	0.78	11	11	IV, IM, IP, Pericard	R	Organism recovered from pericardial cavity
9	17	♂	Osteomyelitis of maxilla meningitis	+	39	1.716	11	4.7	IV, IT, IM, local	R	Meningitis developed while patient was receiving sulfamerazine
10	1	♂	Osteomyelitis of ilium	+	6	1.0	11	4.7	IV, IM	R	140 organisms per cc blood, comatose on entry
11	58	♂	Carbuncle of lower lip metastatic pneumonia, pleural effusion	+	6	1.01	12	98	IV, IP	R	
12	21	♀	pneumonia	+	1	0.60	22	50	IV, IM, IT	R	Meningitis sterile
13	16	♂	Furuncle of face, metastatic pneumonia, cavernous sinus thrombosis, pericarditis	+	9	0.86	11	5	IV, IT	D	Treatment late in disease
14	23	♀	Bacterial endocarditis	+	9	0.77	6	60	IV	D	Death from rupture of abscess of brain
15	21	♀	Bacterial endocarditis	+	6	4.86	10	5	IV, IM	R (4 mo.)	Multiple pulmonary infarcts, systolic murmur in tricuspid area
16	16	♀	Bacterial endocarditis	+	8	0.157	20	5	IV, IM	R (2 mo.)	
17	16	♀	Umbilical cord infection furuncle of neck, metastatic pulmonary lesions, empyema	0	6	0.480	7	3.2	IM, IP	R	Empyema drained by catheter without rib section
18	7	♀	Osteomyelitis of tibia	08	6	4.320	29	20	IV, IM, locally	I	No x-ray evidence of osteomyelitis during convalescence
19	11	♀	Osteomyelitis of fibula	08	7	1.76	11	30	IV, IM, locally	I	
20	32	♀	Ulcerative colitis, multiple abscesses	0	480	0.40	6	50	IV	D	Hemorrhage from colon caused death, no staphylococcal lesions at autopsy
21	14	♀	Maxillary sinusitis, orbital cellulitis, cavernous sinus thrombosis	0	20	1.08	10	38	IV, IM, locally	R	
22	54	♀	Carbuncle of lip, thrombosis of angular vein	0	14	1.07	11	50	IM	R	Dramatic improvement
23	43	♀	Abscess of nasal septum, cellulitis of face	0	6	1.07	10	90	IV, IM	R	
24	20	♀	Acute tracheobronchitis, pregnancy	0	7	0.84	6	6	IM	R	
25	36	♂	Mediastinitis, perforation of esophagus, empyema	0	1*	1.020	8	49	IV, IP, locally	D	No systemic administration for last four days, shortage of drug
26	10	♂	Brain abscess	0	120	0.020	1	..	Locally	R	Single local application at operation with sulfonamides systemically
27	33	♂	Hidradenitis suppurativa	0	68	1.40	14	..	IM	R	
28	8	♂	Bronchiectasis with bilateral empyema	0	40	2.30	26	24	IM, IV	I	Prolonged course
29	23	♂	Osteomyelitis of frontal bone	0	7	1.40	12	91	IV, IM	I	Treated, recurred in 60 days, treated again with penicillin and operation
30	37	♂	Osteomyelitis of thoracic vertebra and fibula, pyous abscess	0	7 yrs	0.0	14	70	IV, IM, locally	U I	
31	12	♂	Osteomyelitis of femur, tibia, mandible and ulna	0	2 yrs	2.100	24	24	IV, IV	U I	Required penicillin and removal of head of femur 60 days later
32	19	♂	Osteomyelitis of humerus	0	100	0.70	6	67	IV, IM	I	No drainage in 1 year
33	49	♂	Osteomyelitis of cervical vertebra, paraplegia	0	6 yrs	0.290	24	..	IV, IM	U I	without operation
34	54	♂	Osteomyelitis of frontal bone and maxilla	0	70	4.0	4	70	IV, IM, locally	I	Penicillin used at operation
35	61	♀	Osteomyelitis of orbital wall	0	100	1.170	12	..	IM, locally	R	Penicillin as adjunct to surgery
36	17	♂	Osteomyelitis of femur; tuberculosis of hip	0	240	0.340	11	40	IV	U I	Whole lesion may be tuberculous

* Routes of administration of penicillin: IV = intravenously, IM = intramuscularly, IT = intrathecally, IC = into cisterna magna, IP = into pleural cavity; IPericard = into pericardial cavity, locally = applied to wound, IMaxil = into maxillary sinus.

† R = recovered, D = died; I = improved, U I = unimproved.

‡ (B) = before penicillin treatment, (A) = after penicillin treatment.

§ Blood cultures positive in another hospital but negative on admission.

* Previously reported: Wood, W. B., Jr., and Moore, R. A. J. Missouri M. A. 40:353, 1941.

Note: Legends described in footnotes *, ‡ and † also apply to tables 2, 3, and 4.

following the first thoracentesis, was uneventful, and an x-ray film of the chest taken at the time of discharge showed only pleural thickening and adhesions.

Summary.—A man aged 54 with staphylococcal furunculosis of the nose and cellulitis of the face was treated with penicillin after bacteremia, metastatic pneumonia and bilateral pleurisy

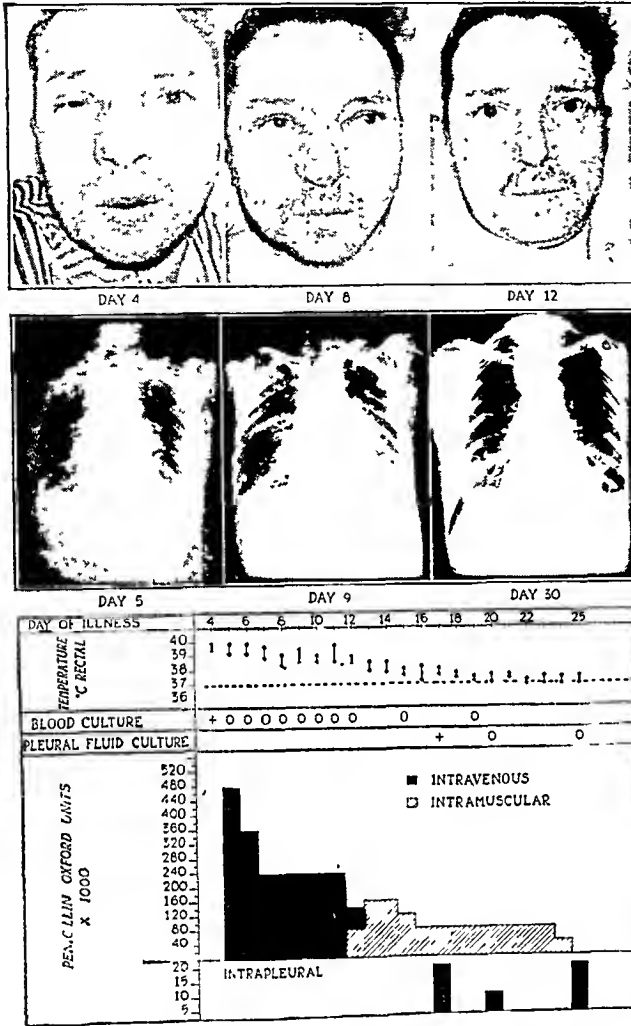


Fig. 2.—Severe staphylococcal infection of face, lungs and pleura.

had developed. An infected pleural effusion was detected on the seventeenth day of illness and was treated with instillation of penicillin into the pleural space together with continued parenteral penicillin therapy. The patient's recovery was complete after twenty days of penicillin treatment.

CASE 8.—History.—A. Y., a girl aged 2 years, entered St. Louis Children's Hospital⁶ after an acute onset of fever and vomiting six days before. On the day preceding admission her right ankle became swollen, red and tender, and she was given 1.75 Gm. of sulfathiazole. When first seen in the hospital she was semistuporous and was obviously acutely ill. Her temperature was 41 C. (105.8 F.); respirations were labored, and there was pronounced stiffness of the neck. No abnormalities of the heart or lungs were noted on either physical examination or fluoroscopy. The tip of the spleen was just palpable, and there were signs of acute inflammation in the region of the right ankle. The leukocyte count was 15,000, with many young forms noted in the differential count. X-ray films of the right ankle showed only delayed development of centers of ossification. The spinal fluid was normal. Culture of the blood showed 212 colonies of hemolytic *Staphylococcus aureus* per cubic centimeter. On entry the patient was given 1.2 Gm.

6. This case is reported through the courtesy of Dr. Alexis Hartmann.

of sodium sulfapyrazine, but on the following day pustules were noted over the entire body, the patient was comatose and sulfonamide treatment therefore was replaced by penicillin therapy (fig. 3). On the same day, incision of the ankle revealed an abscess adjacent to the os calcis but there was no osteomyelitis.⁷ Culture of the exudate showed hemolytic *Staphylococcus aureus*, and penicillin was applied to the wound on a gauze dressing. On the ninth day of the disease a pericardial friction rub was heard, and on the following day fluoroscopy showed enlargement of the heart. On this day the liver became palpable, and there appeared edema of the lower extremities. By the eleventh day the child was more alert, but pulsations of the heart were no longer visible under the fluoroscope. On the fifteenth day 105 cc. of turbid fluid containing hemolytic *Staphylococcus aureus* was removed from the pericardial cavity and penicillin was injected directly into the pericardial sac. This procedure was repeated on subsequent days until sterile straw colored fluid was obtained. The patient's condition gradually improved, and her course in the hospital thereafter was uneventful except for a short bout of fever associated with transient diarrhea. When seen one hundred and thirty-one days after the onset of her illness she was apparently completely well.

Summary.—A girl aged 2 years with severe staphylococcal bacteremia, an abscess of the heel, multiple pustules of the skin and staphylococcal pericarditis made a complete recovery following surgical drainage of the abscess and intensive systemic and local penicillin therapy.

CASE 10.—History.—W. H., a schoolboy aged 13 years, jumped from a tree and complained shortly thereafter of pain in the right hip. He felt poorly during the next two days and by the fourth day became semicomatose, with a fever of 40.8 C. (105.4 F.). He was sent to a hospital in western Missouri, where an x-ray plate of the hip showed no destruction of bone but culture of the blood disclosed hemolytic *Staphylococcus aureus*. He was given sulfathiazole with an initial dose of 1 Gm. followed by 0.5 Gm. every four hours. In spite of this therapy the temperature of 38 to 41 C. (100.4 to 105.8 F.) persisted and he remained in coma. When first seen in the Barnes Hospital, his lungs were clear and his heart was normal except for a systolic murmur at the apex. Neither spleen nor

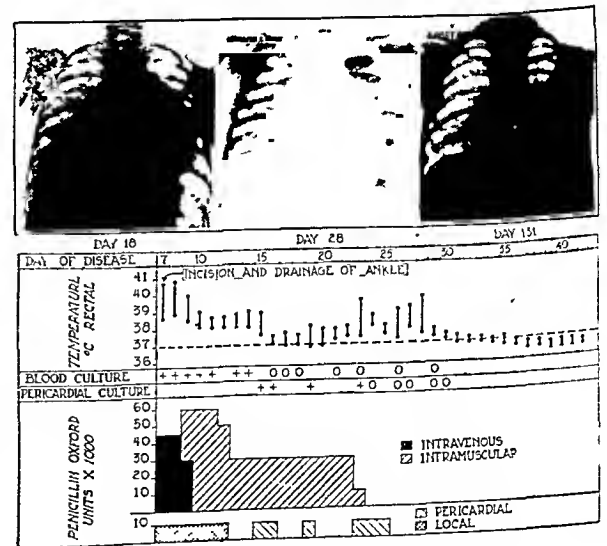


Fig. 3.—Staphylococcal pericarditis responds to drainage and penicillin

liver was palpable. The right thigh was swollen, and passive motion of the leg caused pain. There were also swelling and slight redness of the right ankle. The leukocyte count was only 11,500, but there were many young forms seen in the differential count. X-ray films of the hip, thigh and ankle showed no lesions of the bone, but the blood contained 140 colonies of hemolytic *Staphylococcus aureus* per cubic centimeter.

7 The operation was performed by Dr. Peter Heinbecker.

and therapy with penicillin was begun immediately (fig. 4). Although the patient's condition improved and roentgenograms of the hip on the twelfth day failed to show osteomyelitis, both the fever and the bacteremia persisted. Three hundred and fifteen thousand units of penicillin in twenty-four hours was therefore administered, and thereafter the fever subsided and

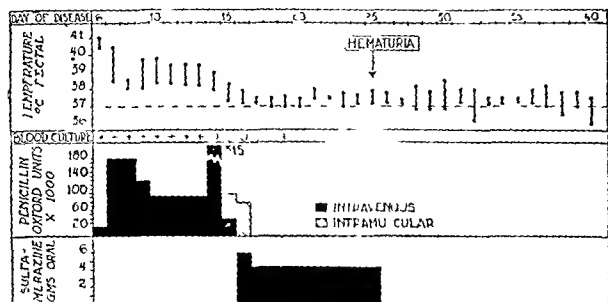


Fig. 4.—Treatment of patient with acute osteomyelitis

bacteria could no longer be cultured from the blood. By the sixteenth day the patient had apparently recovered, but the supply of penicillin was exhausted; hence sulfamerazine was administered to prevent a possible recurrence of the infection. Hematuria was noted on the twenty-fifth day, but it subsided when sulfamerazine was discontinued. There followed a toxic psychosis of short duration, and on the twenty-ninth day x-ray films revealed evidence of osteomyelitis near the right sacro-iliac joint. A low grade fever occurred on the forty-first day of illness, but it subsided promptly after a short course of sulfathiazole treatment. When seen eighty-eight days after the onset of his illness the patient was apparently well and roentgenograms showed healing of the focus of osteomyelitis.

Summary.—A schoolboy aged 13 years with acute osteomyelitis of the ilium entered the hospital in coma resulting from severe bacteremia. Slight clinical improvement resulted from penicillin administered in the usual doses, but fever and bacteremia persisted. Only after massive doses of the drug were given over a period of twenty-four hours did the patient recover. Because the supply of penicillin became temporarily exhausted, sulfonamide therapy was later resorted to in order to prevent possible recurrence of the infection.

CASE 21.—History.—F. A., a girl aged 14 years, suffered an infection of the upper respiratory tract two weeks before admission to the hospital. Two days before entry she complained of severe left frontal headache and noted low grade fever and swelling of the left eyelid. When first seen in the hospital she appeared to be acutely ill with fever and edema of the left side of the face, including the eyelids. The nasal mucosa was swollen, and purulent discharge was draining from the nose. An x-ray film revealed opacity of the left maxillary sinus. The only other significant condition observed on admission was the presence of slightly dilated retinal veins in both fundi. The patient had received sulfathiazole before admission and was given sulfamerazine in the hospital, the blood level reaching 11.4 mg. per hundred cubic centimeters. On the fifth day of illness a small incision was made in the left upper eyelid.⁸ No pus was obtained, but culture of the serosanguineous material recovered showed hemolytic *Staphylococcus aureus*. The same organism was cultured from the nose. On the following day there was noted proptosis of the left eye with severe limitation of motion and swelling of the left eyelids (fig. 5). The right eyelids also were swollen, and although there were no demonstrable signs of meningitis and the blood was sterile on culture, a diagnosis of probable thrombophlebitis of the left cavernous sinus was made. Sulfonamide therapy was discontinued, and the patient was given penicillin, as shown in figure 5. Her condition steadily improved, and the fever fell by lysis. The patient's recovery was complete except for slight residual weakness of the left superior oblique muscle.

Summary.—A girl aged 14 years with left maxillary sinusitis complicated by staphylococcal cellulitis of the face and orbit and probably thrombophlebitis of the left cavernous sinus failed to respond to sulfonamide chemotherapy but made a rapid recovery when given penicillin.

Pneumococcal Infections.—Eighteen patients with pneumococcal infections were treated with penicillin. The results of treatment are summarized in table 2. Among the 9 patients with pneumococcal meningitis treated with penicillin there was only one death. The 1 patient who failed to recover was an infant aged 7½ months who had been suffering with meningitis for twenty days before treatment was instituted.

Six patients with pneumococcal pneumonia were treated with penicillin and 2 died. The first patient who failed to recover was a man aged 72 with pneumonia of eight days' duration. He died within twenty-four hours of the onset of treatment. The second fatality was that of a man aged 45 admitted to the hospital with uremia apparently due to sulfonamide nephritis. Death occurred after two days of treatment.

The results of penicillin treatment in 3 cases of empyema were inconclusive. The drug was injected directly into the pleural space. In 2 cases surgical drainage of the empyema was eventually deemed necessary, and in the third case, in which surgical intervention was not required, culture of the pleural fluid was

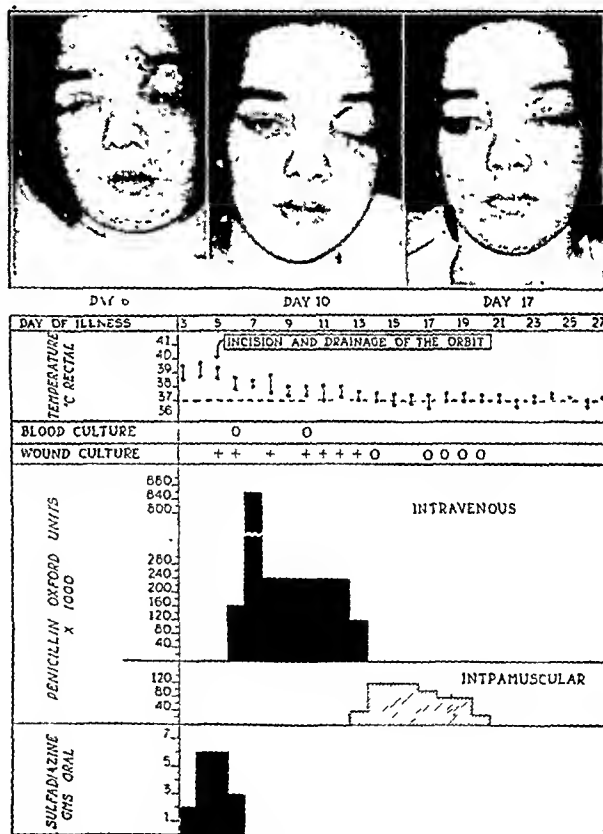


Fig. 5.—Cellulitis of face and sinusitis responds to penicillin.

sterile before penicillin treatment was begun although pneumococci had been seen in the stained sediment.

Abstracts of 2 of the cases of pneumococcal meningitis are presented:

CASE 37.—History.—T. H., a woman aged 60, became ill with pain in the right ear and a purulent aural discharge two months before she entered the hospital. These symptoms per-

8. The operation was performed by Dr. A. C. Stutzman.

sisted for one month, at the end of which time she began to complain of tinnitus and vertigo. Forty-eight hours before admission to the hospital she became acutely ill with fever, headache and finally coma. When first examined she had a temperature of 40.6 C. (105.1 F.). The right ear drum was thickened and wrinkled, and a small amount of purulent discharge was noted in the external auditory canal. The external rectus muscle of the right eye was apparently paralyzed, and there was horizontal nystagmus with the quick component to the left. The neck was stiff, and both Kernig and Brudzinski signs were positive. The leukocyte count was 36,900, and type 3 pneumococci were grown from the blood on culture. A

abscess of the petrous bone was drained. At operation the lateral sinus was examined but was not opened. Following the operation penicillin was applied directly to the operative wound at daily intervals.

The patient improved rapidly, the course being shown in figure 6. The intrathecal administration of penicillin was stopped on the ninth day. Four days later there was a recurrence of the meningitis, although the blood culture remained sterile. Intrathecal treatment with penicillin was immediately resumed, and larger doses were again employed intravenously. On the fourteenth day the operative wound was again explored and a thrombus was found in the lateral sinus, which was opened

TABLE 2.—Pneumococcic Infections

Case No.	Age	Sex	Diagnosis	Type	Blood Culture	Duration of Disease, Days	Penicillin Treatment			Other Specific Treatment	Results	Comment	
							Total Dosage, Units × 1,000,000	Days of Therapy	Body Wt., Kg.				
37	60	Q	Mastoiditis; petrositis; meningitis; lateral sinus thrombosis	3	+	2	1.37	18	..	IV, IM, IT, locally	Mastoidectomy; ligation of lateral sinus; sulfadiazine (A)	R	Relapse when dosage reduced due to lateral sinus infection
38	18	Q	Mastoiditis; meningitis	3	+	1	1.66	12	67	IV, IM, IT, locally	Sulfadiazine (B); mastoidectomy	R	Uneventful
39	59	♂	Mastoiditis; meningitis	3	0	3	2.32	15	75	IV, IM, IT, locally	Sulfamerazine (B); mastoidectomy	R	Uneventful
40	42	Q	Pneumonia; meningitis	7	+	5	3.55	16	..	IV, IM, IT	Sulfadiazine (B)	R	Stiff neck; moderate deafness and diplopia with 20 cells in spinal fluid on 23d day
41	44	Q	Meningitis	19	+	5	1.41	7	..	IV, IM, IT	Sulfamerazine (B and A); mastoidectomy	R	Uneventful
42	7½ mo.	♂	Pneumonia; meningitis	1	0	20	0.58	7	92	IV, IT	Sulfapyrazine (B); serum (B)	R	Cortical destruction and hydrocephalus at autopsy
43	50	Q	Mastoiditis; meningitis	8	+	1	3.563	28	72	IV, IM, IT	Mastoidectomy	R	Relapse when penicillin discontinued; uneventful recovery on further treatment
44	14	♂	Meningitis	1	0	3	0.275	7	65	IM, IT	Sulfadiazine	R	Meningitis under control on entry; treated because recurrent
45	17	♂	Meningitis	22	+	3	2.270	21	75	IV, IT	Sulfonamide	R	
46	43	♂	Pneumonia	1	+	6	1.30	7	66	IV, IP	Sulfamerazine (B and A)	R	Severe alcoholic addict
47	56	♂	Pneumonia; sulfonamide azotemia; perirenal abscess	5	+	2	1.51	14	53	IV, IM	Drainage of abscess	R	NPN reached 148; course prolonged; carcinoma of the kidney discovered later
48	79	♂	Pneumonia	1	+	3	3.523	18	..	IV, IM	Sulfamerazine (B)	R	Bacteremia on 2d and 3d days of illness; arteriosclerotic heart disease
49	70	♂	Pneumonia; bronchiectasis of right upper and left lower lobe	3	0	3	1.430	11	65	IM	.....	R	Right lower and middle lobectomy 6 months before present illness
50	72	♂	Pneumonia	Un-typed	+	8	0.120	1	..	IV	Sulfadiazine (B)	D	Treated less than 24 hours; pneumococci not obtained at autopsy
51	45	♂	Pneumonia; sulfonamide azotemia	Un-typed	0	5	0.240	2	..	IV	Sulfonamide (B)	D	All lobes of lung involved; no organism at autopsy
52	51	♂	Empyema	1	0	17	0.070	5	..	IP	Sulfonamide (B); open drainage	I	Exudate became sterile with penicillin but required drainage
53	20	♂	Empyema	5	0	6	0.035	4	..	IP	Sulfamerazine and serum	R	Culture of pleural fluid negative before penicillin
54	52	♂	Empyema	7	+	24	4.240	19	50	IM, IP	Sulfadiazine (B); thoracotomy	I	

lumbar puncture was performed, and the spinal fluid was turbid and was obviously under increased pressure. Compression of the right jugular vein failed to cause a rise in the spinal fluid pressure. The cell count on the spinal fluid was 2,400 cells per cubic millimeter, of which 95 per cent were polymorphonuclear leukocytes. Type 3 pneumococci were identified in the fluid by the direct quellung reaction. A stained smear of the spinal fluid sediment showed approximately 8 diplococci for each leukocyte. The concentration of sugar in the cerebrospinal fluid was 8 mg. per hundred cubic centimeters. X-ray studies of the right mastoid and petrous bones (fig. 6) revealed evidence of mastoiditis and destruction of bone in the region of the petrous apex. Penicillin therapy was begun immediately by both intravenous and intrathecal routes, and on the second day of treatment a radical mastoidectomy was performed⁹ and an

and packed with penicillin. The right internal jugular vein was ligated in the neck. For several days small amounts of spinal fluid drained through the operative wound, but thereafter the patient made a rapid recovery. Penicillin was applied locally to the operative wound, which healed rapidly without evidence of infection.

Summary.—A woman aged 60 with otitis media, mastoiditis, meningitis, bacteremia and an abscess of the petrous bone, all due to the type 3 pneumococcus, responded promptly following mastoidectomy, drainage of the petrous abscess and intensive penicillin therapy. On the thirteenth day of her illness, however, there was a recurrence of the meningitis. A second operation was performed, at which the lateral sinus was opened and was packed and the external jugular vein ligated in the neck. Following the second operation and further intensive penicillin therapy the patient promptly recovered.

9. By Dr. T. E. Walsh.

CASE 38—History.—R. T., a girl aged 18 years, had had frequent attacks of headache and pain in the right ear since childhood. For five years she had had intermittent otorrhea. Three weeks before she was admitted to the hospital she noticed drainage from her right ear and complained of pain in and behind the ear. Fifteen hours before her admission to the

was performed twelve hours later gram positive diplococci, identified as type 3 pneumococci, could be seen in the spinal fluid and the cell count had risen to 4,700. An x-ray film of the right mastoid region showed increased density of the mastoid cells with destruction of bony trabeculae. When the patient first entered the hospital she was given sulfadiazine, but this therapy was discontinued on the second hospital day and penicillin treatment was begun. The drug was given intravenously and intrathecally, as shown in figure 7. On the fourth day of illness a simple mastoidectomy was performed¹⁰ and, although granulation tissue and friable bone were found at operation, cultures of the tissue were sterile. Following the operation the meningitis subsided rapidly, and the patient had no further difficulty.

Summary.—A girl aged 18 years who gave a history of chronic otorrhea for five years was admitted to the hospital with chronic otitis media, mastoiditis and a meningitis due to the type 3 pneumococcus. Following intensive penicillin therapy and a simple mastoidectomy she recovered promptly in spite of the fact that her illness was complicated by bacteremia.

(To be continued)

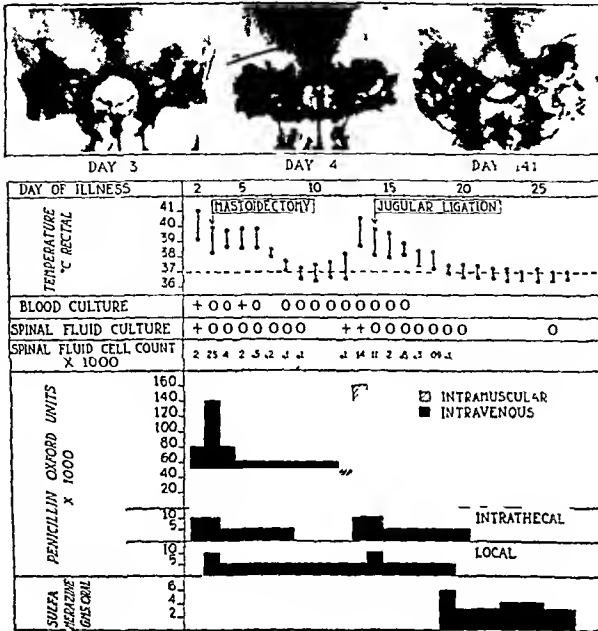


Fig 6.—Pneumococci mastoiditis and meningitis

hospital she was seized with a severe headache and soon fainted. Although she promptly regained consciousness, the severe headache continued and she gradually became delirious. When first examined, her temperature was 39 C. (102.2 F.) and she was drowsy and difficult to arouse. There was a small amount of greenish yellow discharge from the right ear, and the right

MANAGEMENT OF CHANCROID IN A TROPICAL THEATER

REPORT OF 1,555 CASES

MAJOR E. M. SATULSKY

MEDICAL CORPS, ARMY OF THE UNITED STATES

Chancroid, or *ulcus molle*, is an acute, inflammatory, destructive ulcer characterized by very slight induration and moderate pain on palpation. It is caused by venereal inoculation with *Hemophilus ducreyi* and occurs usually on the genitals or the surrounding skin. Other areas may also be involved, usually as a result of autoinoculation.

The causative agent was first described by Augusto Ducrey in 1889 and is found in the purulent discharge from the surface of the lesions. It is a small nonmotile, non-spore bearing, non-acid fast, gram negative bacillus measuring from 1 to 2 microns in length and about 0.5 micron in thickness. It appears as a short rod and may be arranged in pairs, groups or chains lying parallel to one another. Several other forms may be assumed including a parallel "school of fish" arrangement. It may be intracellular or extracellular in position.

Variations in staining characteristics have been described by various workers, and numerous methods have been devised for culturing the organisms. The most recent method is described by Dienst,¹ who concluded that a medium containing defibrinated rabbit blood, cystine, dextrose and beef infusion agar is best suited for the purpose and found that the bacillus grows best at 28 to 32 C., with a certain amount of moisture necessary for growth on the surface of the medium.

INCIDENCE

The Surgeon General's Reports² indicate that there were 39,044 primary admissions for chancroid in the Army in 1917-1918 and that they comprised 11 per cent of the total of the more common venereal diseases.

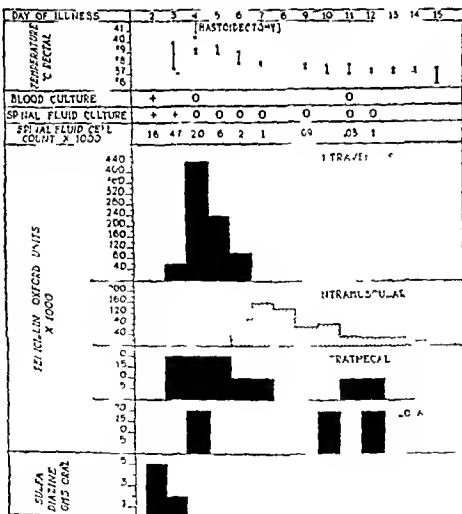


Fig 7.—Chronic otitis media and meningitis from pneumococcus.

drum was perforated in two places and was of a dull red. Her neck was stiff, and the Kernig and Brudzinski signs were positive. There was a leukocytosis of 18,250 and a type 3 pneumococcus was cultured from the blood. The spinal fluid was cloudy and contained 1,670 polymorphonuclear leukocytes per cubic millimeter. Although no bacteria were seen on smear of the spinal fluid sediment, the type 3 pneumococcus was discovered in the fluid by culture. When second lumbar puncture

10. By Dr. A. C. Stutsman.

The department surgeon supplied the statistics.

Read in part before the 15th Annual Medical Society, June 20, 1944.

Captains A. Paul and William Halpern rendered valuable assistance in this study.

From the Medical Service, Section of Dermatology and Syphilology, 210th General Hospital.

1. Dienst, R. B.: New Preparation of Antigen for Intracutaneous Diagnosis of Chancroidal Infection, *Am. J. Syph., Gonorr. & Ven. Dis.* 26: 201-203 (March) 1942.

2. Chancroidal Infection, in Ireland, M. W.: Medical Department of the United States Army in the World War, Washington, D. C., Government Printing Office, 1928, vol. 9, chapter 7, p. 287.

Primary admission of all venereal disease patients between April 1917 and December 1919 was 86.6 per thousand annually, or 10.2 per cent of the total admissions to army hospitals.³ In the United States in 1918 the rate for enlisted troops is shown in table 1.⁴

Turner and Sternberg⁵ state that during recent months the rate of venereal infection in the Army has

TABLE 1.—Rate of Syphilis, Gonorrhea and Chancroid for Enlisted Troops in the United States in 1918

	White	Colored	Ratio W/C
Syphilis.....	18.83	129.90	1:6.90
Gonorrhea.....	78.07	614.68	1:6.58
Chancroid.....	4.98	41.5	1:8.91

TABLE 2.—Diagnoses Made in 2,240 Enlisted Troops

1. Chancroid.....	1,555
2. Syphilis (all types).....	317
3. Ulcers, penile, cause and type undetermined.....	135
4. Lymphopathia venereum.....	19
5.....	45
6.....	50
7.....	15
8. Miscellaneous.....	126
Total.....	2,240

been below peacetime levels and less than half that recorded during World War I. They also state that, among troops stationed in the United States, chancroidal lesions comprise about 6 per cent of all cases of venereal disease. An examination of the statistics in table 3 will reveal that in this area chancroid comprised 38.66 per cent of all venereal diseases in 1942 and 27.25 per cent in 1943. This disease presents a more serious problem in this area than in the zone of interior.

Greenwald,⁶ at a post in the United States where the ratio of colored soldiers to white is about 1 to 5, reports 73 colored to 3 white primary admissions during a nine month period, with a ratio of approximately 120:1. In a series of 175 patients, Kornblith and his co-workers⁷ report 127 Negroes, 44 white persons, 3 Puerto Ricans and 1 Chinese. Rauschkolb⁸ reports a 66 per cent colored incidence in civilian clinic practice.

In the Panama Canal Department, where there were relatively few colored soldiers, the high percentage of chancroidal infections in white soldiers is significant. While there is a decided variation from month to month, it is readily seen that the trend has been precipitously down since May 1943 (charts 1 and 2). The dramatic reductions in the total venereal disease rate and also in the chancroid rate are the results of a vigorous and sustained campaign waged by the medical officers of this department under the guidance and auspices of the surgeon. This campaign has stressed one thing above all others: adequate and thorough prophylaxis. That such prophylactic measures are effective for all venereal diseases, and chancroid to an even greater extent than the others, has been conclusively proved.

3. Pappas, J. P.: Venereal Disease Problem, United State Army, Mil. Surgeon 93:172 (Aug.) 1943.

4. Report of the Surgeon General of the United States Army, Washington, D. C., Government Printing Office, 1919, pt. 1, pp. 955-959.

5. Turner, T. B., and Sternberg, T. H.: Management of the Venereal Diseases in the Army, J. A. M. A. 124:133 (Jan. 15) 1944.

6. Greenwald, E.: Chancroidal Infection, J. A. M. A. 121:9 (Jan. 2) 1943.

7. Kornblith, B. A.; Jacoby, A., and Chargin, L.: Chancroid: Treatment with Sulfathiazole and Sulfanilamide, J. A. M. A. 117:2150 (Dec. 20) 1941.

8. Rauschkolb, J. E.: Circumcision in Treatment of Chancroidal Lesions of Male Genitalia: Further Observations, Arch. Dermat. & Syph. 39:319 (Feb.) 1939.

The incidence of clinical chancroidal infection in females is much less frequent than in males. There is evidence that the Ducrey bacillus may exist in the female genitalia as a saprophyte and when transplanted to other tissues may then become a pathogen. Levin⁹ has stated that the female may act as a symptomless carrier of the disease.

This report deals with 1,555 patients in whom the diagnosis of chancroid was made (table 2). In this series an average incubation period of three to ten days elapsed between the time of sexual exposure and the onset of the ulcerations. All the patients were male soldiers in good health and physical condition. Sixty-two were colored soldiers and the remainder white and American Indian troops. In all cases there were definite penile ulcerations suggestive of chancroid. I have verified the observations of many workers who have reported an initial small reddish macule which becomes papular, then pustular and finally ulcerative as the result of maceration and friction. Several patients presented lesions involving the base of the penis and the pubis; others had lesions involving the perineal area and intergluteal aspects of the buttocks in addition to the penile lesions; 1,160 patients had multiple lesions and 390 presented single lesions. Most of the ulcers appeared at the edges of a phimotic prepuce, on the mucous membrane of the prepuce or in the coronal sulcus. The areas about the frenulum were frequently involved, with subsequent perforation or destruction of this part. Eight of the patients were circumcised and presented lesions on the frenulum and in the coronal sulcus. These are the areas apparently subjected to the greatest trauma during the sexual act.

Clinically, a chancroidal infection is manifested by the appearance of ragged, irregular, slightly indurated ulcerative lesions covered with a variable amount of yellow-gray purulent material. This pellicle wipes off easily and reveals a necrotic, dirty, granular base which bleeds easily when manipulated. The ulcers are of various sizes and shapes and as a rule are circinate

TABLE 3.—Venereal Disease

	Chancroid, Rate per Thousand Annually by Months			Total Venereal Disease, Rate per Thousand Annually by Months			Percentage of Chancroid by Months		
	1942	1943	1944	1942	1943	1944	1942	1943	1944
January.....	21.2	30.7	1.0	45.0	68.7	25.5	45.6	44.7	4.1
February.....	19.6	17.6	1.6	48.8	50.2	18.8	40.1	35.4	8.7
March.....	10.8	19.1	0.9	33.1	52.5	23.9	33.1	37.0	3.7
April.....	16.7	19.2	1.0	47.3	50.8	25.0	32.9	37.7	7.6
May.....	11.6	27.3	....	42.0	60.1	....	28.0	45.5	....
June.....	12.0	9.9	....	61.0	43.7	....	23.2	22.8	....
July.....	20.0	7.6	....	81.7	41.9	....	36.7	18.1	....
August.....	30.4	6.7	....	87.1	32.9	....	34.8	20.5	....
September.....	35.6	5.6	....	74.3	32.1	....	49.0	17.6	....
October.....	36.0	6.8	....	75.5	33.5	....	47.0	20.4	....
November.....	36.6	4.9	....	78.8	29.0	....	47.8	16.8	....
December.....	33.9	2.3	....	73.8	22.3	....	45.9	10.5	....

or ovoid in outline. The edges are soft, friable, slightly indurated and irregular and may be slightly undermined. A reddened inflammatory and slightly edematous areola is usually present. The ulcers spread by coalescence and peripheral extension; they are inoculable and autoinoculable. The high percentage of multiple lesions in this and other series of cases is apparently due to the autoinoculability. There is

9. Levin, E. A.: Diagnosis of Chancroid, Urol. & Cutan. Rev. 45:387 (Sept.) 1941.

usually unilateral or bilateral swelling of the inguinal lymph nodes, which may be very tender and painful on walking or on palpation. Fifty-six per cent of the patients showed this involvement. Those with advanced cases who were transported over long distances to this hospital showed fever, much discomfort and malaise. Several cases showed spontaneous rupture of inguinal nodes and others presented evidence of recent incisions for drainage. These cases all showed evidences of

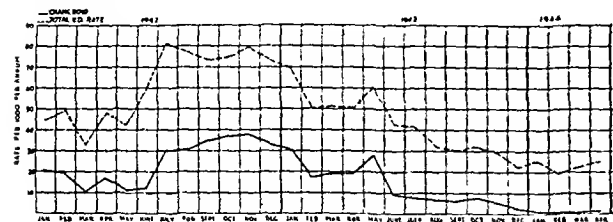


Chart 1.—Graphic representation of rate per thousand annually by months of chancroid and total venereal disease.

secondary infection. In most of the cases the lymph nodes were enlarged approximately to the size of a small walnut. They were firm, elastic, movable, slightly tender on palpation, not matted and nonsuppurative. The overlying skin in these cases was normal. More advanced cases showed inflammation of the skin, matting and acute inflammation of the lymph nodes, extreme tenderness and variable degrees of softening. The lymphatic swellings in the groin which later gave rise to abscesses are commonly spoken of as "buboes."

DIAGNOSIS

The diagnosis of chancroid was made on clinical grounds alone after laboratory procedures were used to eliminate complicating diseases, particularly syphilis. A diagnosis of chancroid should not be made, despite the typical clinical picture, until primary syphilis has been ruled out. Each patient, on admission, was put to bed and warm continuous saline compresses were applied to the affected areas. A minimum of three daily dark field studies for *Treponema pallidum* were made; some cases were studied for longer periods before syphilis was differentiated from chancroid. In lesions due to both diseases the diagnosis is more difficult. Each patient with enlargement of the inguinal nodes was tested with chick embryo antigen (Frei test) before the diagnosis of chancroid was made. Serologic tests for syphilis (Wassermann and Kahn) were done on admission and at weekly intervals in two separate laboratories during the hospitalization of the patient. Because of the possibility of coexistent syphilis, all military personnel in this department with the diagnosis of chancroid have a serologic test for syphilis performed at monthly intervals for three months following discharge from hospitals.

Various laboratory procedures for the diagnosis of chancroid have been reported and advocated in the literature. These include the Ito-Reenstierna skin test and the staining or cultural isolation of the Ducrey bacillus. Several workers have stated that they consider these procedures the most reliable single factors in the precise diagnosis of chancroid.

The Ito-Reenstierna test is a reaction to Ducrey vaccine injected intradermally. The original vaccines employed killed Ducrey organisms. Cole and Levin¹⁰

described an intracutaneous test for chancroidal infection using sterilized pus from a bubo prepared like the antigen for the Frei test. Sanderson and Greenblatt¹¹ described the preparation from a culture of a vaccine for the skin test. An accepted commercial vaccine is now available. There is disagreement as to the time intervals between the appearance of the infection clinically and the response of the skin to the vaccine. Reports vary from six days to five weeks for the development of this allergic response of the skin.¹²

A positive reaction after the intradermal injection of 0.1 cc. of vaccine is supposed to mean a present or a past healed chancroidal infection. The Suttons¹³ state "It does not mean that the sore of the patient at the time of the test is certainly chancroid or is only chancroid." It has been stated, however, that a negative test dependably rules out a chancroidal infection. Some workers advocate the use of this test and report high percentages of positive results. Greenwald⁶ reports positive skin tests in three fourths of the 75 cases he observed. Kornblith⁷ states that the reaction was positive and specific in 95 per cent of his 175 cases but adds that the test is more important when the results are negative to exclude active chancroidal disease. The permanence of the skin test together with its false positives and negatives must always be kept in mind.

Some workers⁷ have stated that the identification of the Ducrey bacillus on smears stained with the Unna-Pappenheim method (methyl green pyronine) was found to be the most important single diagnostic criterion. They report the identification of the organism in 88.5 per cent of the cases in routine smears. Others, using the ordinary Gram stain, found the smears to be positive in 65 per cent of the cases.⁶

It is probable that other strains of streptococci may produce ulcerations morphologically identical with chancroidal infections. The Suttons¹⁴ stated "It is probable that some chronic destructive chancroidal lesions are actually microaerophilic streptococcal ulcers." Turner and Sternberg,⁵ in discussing chancroid infections, state that, since diagnostic methods usually available are often none too reliable, it is possible that more than one etio-

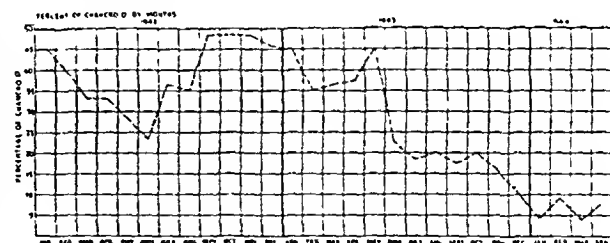


Chart 2.—Graphic representation of chancroid by months.

logic entity is being encountered. They state further that more clinical and bacteriologic studies on this problem are needed. Knott and his associates¹⁵ report

11. Sanderson, E. S., and Greenblatt, R. B.: Cultivation of *Hemophilus Ducreyi* and Preparation of Antigen for the Intracutaneous Diagnosis of Chancroidal Infection, *South. M. J.* 30:147 (Feb.) 1937.

12. Becker, S. W., and Obermayer, M. E.: *Modern Dermatology and Syphilology*, Philadelphia, J. B. Lippincott Company, 1940, p. 350. Speiser, M. D.: Infectious Lesions About External Genitals with Special Emphasis in Diagnosis, *Am. J. Obst. & Gynec.* 43:681 (April) 1942. Dulaney, A. D.: Use of Ducrey Vaccine in Diagnosis, *Am. J. Syph., Gonorr. & Ven. Dis.* 21:667 (Nov.) 1937.

13. Sutton, R. L., and Sutton, R. L., Jr.: *Diseases of the Skin*, ed. 10. St. Louis, C. V. Mosby Company, 1939, p. 973.

14. *Diseases of the Skin*, p. 972.

15. Knott, L. W., and others: The Differential Diagnosis of Lymphogranuloma Venereum and Chancroid by Laboratory and Skin Tests, *Am. J. Syph., Gonorr. & Ven. Dis.* 27:657 (Nov.) 1943.

10. Cole, H. N., and Levin, E. A.: Intradermal Reaction for Chancroids with Chancroidal Bubo Pus, *J. A. M. A.* 105:2040 (Dec. 21) 1935.

that the results of the diagnostic skin tests for chancroid should be interpreted with caution. A positive reaction does not necessarily establish the diagnosis nor a negative reaction exclude it. The best criterion in the differential diagnosis of chancroid remains the clinical appearance of the lesions. The skin reactions are at best of confirmatory value and do not alone suffice to establish a diagnosis.

The Surgeon General of the United States Army states¹⁶ that the laboratory tests for the diagnosis of chancroid (Ito-Reenstierna skin test or the staining or cultural isolation of the Ducrey bacillus) are not recommended.

Pursuant to these instructions, the diagnosis of chancroid in this series was not made on laboratory findings or skin tests but was made on clinical grounds after other laboratory procedures were used to rule out other diseases or mixed infections. The diagnosis of "ulcers, penile, cause and type undetermined" was made on small, atypical superficial ulcerations which healed rapidly under saline compresses while dark field examinations were being done.

THERAPY

Sulfonamide therapy has become the therapeutic method of choice in the treatment of chancroidal infections. Before its advent various local and systemic measures were advocated and used. These included various types of local applications, the administration of foreign proteins, vaccines, arsenicals, roentgen rays and many other forms of therapy. Local surgical procedures and cauterizations with electrical and chemical means were employed for many years. The sulfonamides have greatly reduced the duration of the disease, complications have been avoided and tissue destruction with extensive scarring have been reduced to a minimum. Circumcisions and other operative procedures are strictly avoided during the acute phases of the disease and have not been found necessary or advisable in this series. During surgical manipulations the infection may be transmitted by means of dressings, towels and instruments. Rauschkolb⁸ found autoinoculations along the lines of incision in a series of 247 patients treated routinely with circumcision. After an adequate trial of therapy, a dorsal slit was necessary in 6 of our patients because of severe phimosis which interfered with proper drainage and therapy. We agree with those workers who state⁷ that "circumcision after a cure of a chancroidal infection should be deferred for at least two or three months after all signs of local infection have completely subsided. The risk of poor healing or reactivation of sluggish organisms in the depths of the tissues if operation is performed earlier is always present."

In cases with soft, fluctuant, suppurative inguinal glands incisions and drainages were not performed. The affected areas were cleaned thoroughly with warm water and soap and painted with 3.5 per cent tincture of iodine and alcohol. A small cannula was inserted firmly into the point of maximum softening. In some cases ethyl chloride was used as a spray for local anesthesia. The pus was aspirated with a syringe through the cannula, aided with slight manual pressure when necessary. After all the pus was evacuated, 1 to 1.5 cc. of 7 per cent tincture of iodine was instilled into

the cavity through the cannula left in situ. This caused a moderate degree of temporary burning in some patients, while others tolerated it without complaints. A pressure bandage was applied following removal of the cannula and the patient kept at bed rest for the following three to four days. During this time there is drainage of an iodine stained semipurulent serum and clumps of purulent material through the small opening in the skin. With the removal of the infected material the pain and discomfort of the patient cease almost immediately and the fever begins to subside. In five to seven days the area is completely healed without any sequelae.

Many types of local medications were used in attempting to discover the most efficacious combination of drugs to instill into the gland cavity. These included insufflation of various sulfonamide powders, sulfonamide powders in glycerin, thymol iodide powder, iodoform powder, solutions of thymol iodide and iodoform, azochloramide in triacetin 1:500 and balsam of Peru. The instillation of 7 per cent tincture of iodine has given us excellent results in all cases in which it was employed.

It has been our practice to avoid local and systemic therapy while the dark field examinations are being done. We have found that warm saline compresses if adequately applied are sufficient to clean local lesions prior to dark field study. After syphilis has been ruled out by a sufficient number of negative examinations, local therapy is instituted. This consists of thorough washing with warm water and white soap twice a day and careful drying of the affected parts. Powdered sulfanilamide is dusted on liberally and a loose dressing applied. This is repeated twice daily until the lesions heal. In patients with a tight phimosis and underlying ulcerative lesions, the phimotic preputial cavity is irrigated twice daily with a small hand syringe using a warm 1:5,000 potassium permanganate solution. In small superficial chancroidal lesions local therapy alone may suffice. Where indicated clinically oral sulfonamide therapy is employed simultaneously. For larger, burrowing, deep and secondarily infected ulcerations systemic administration of sulfonamides by mouth was necessary immediately.

Oral systemic therapy consisted of sulfathiazole 1 Gm. (15 grains) four times a day for five days followed by 0.5 Gm. (7½ grains) four times a day for ten days. This is a total intake of 40 Gm. (600 grains) in fifteen days. In attempting to determine the most efficient regimen of therapy, other sulfonamides were used. Sulfanilamide may be used in doses of 1 Gm. (15 grains) three times a day for five days followed by 0.6 Gm. (10 grains) four times a day for ten days. Sulfadiazine was used in doses of 1 Gm. (15 grains) four times a day for five days followed by 0.5 Gm. (7½ grains) four times a day for ten days. The latter drug was discontinued, because at the time this study was made cases of anuria were reported in the literature following its use and several cases occurred in this hospital. There were no complications from the concomitant use of local and systemic sulfonamide therapy. There were no major toxic reactions to the oral administration of the various sulfonamides. Some patients had nausea, vomiting and mild attacks of dizziness. Cyanosis of the lips and finger nail beds was noted in a few instances. Dermatitis medicamentosa manifested by urticarial, erythematous and scarlatiniform eruptions

¹⁶ Diagnosis and Treatment of the Venereal Diseases, Circular Letter No. 74, July 25, 1942, paragraph 5.

and by erythema nodosum lesions was also found. Each patient was carefully observed daily for untoward symptoms or signs of toxicity. Toxic reactions were found more commonly with sulfanilamide than with sulfathiazole. There were no cases of anuria, hematuria or dysuria. In 22 cases these drugs were discontinued by mouth because of persistent nausea, vomiting or a sudden decrease in the white blood cell counts. In 10 additional cases with gastrointestinal upsets the drugs were tolerated without complaint when administered with sodium bicarbonate 10 grains (0.6 Gm.) with each dose. Fluids were forced on all patients receiving oral sulfonamide therapy. Blood counts and urinalyses were done on admission. At three day intervals checks were made on the hemoglobin, white blood cell count and the urine of each patient. Sulfonamide blood levels were not determined.

All lesions healed under the therapy outlined without surgical intervention. Superficial infections healed with local applications of sulfanilamide powder only. Patients were discharged from the hospital to full duty when all lesions were completely healed and epithelized. Small inguinal glands were absorbed and responded well to systemic therapy with sulfonamides, bed rest and ice caps locally.

The average hospitalization of all lesions in this series was 11.2 days. In 1918 the average time lost from duty was 24.9 days.²

There were 55 patients who developed subsequent penile lesions and were readmitted to the hospital:

A. Eighteen of these patients presented new lesions which were positive for *Treponema pallidum* on reexaminations.

B. Thirty-seven patients presented clinical lesions of chancroid.

(a) Nine patients have histories of sexual exposures without mechanical or chemical prophylaxis within sixty days despite rigid quarantine.

(b) Twenty patients had presented small superficial lesions on the first admission and had received only local therapy.

(c) Eight patients had received local and oral sulfonamide therapy on the first admission but presented chancroidal ulcerations in the original sites and in new areas on readmission.

All these new lesions developed from three to five days after discharge from the hospital to full duty. All patients who were readmitted responded satisfactorily without reactions to further local and systemic sulfonamide therapy.

SUMMARY AND CONCLUSIONS

1. A series of 1,555 consecutive patients with chancroidal infections were treated in an army hospital.

2. All cases in which the clinical diagnosis of chancroid was made responded to local and systemic therapy with a sulfonamide.

3. An efficient method of treatment of inguinal abscesses was developed.

4. Sulfathiazole was found to be the most efficacious drug to be administered orally.

5. The average hospitalization of all cases was 11.2 days.

6. Further clinical and bacteriologic work for the more precise diagnosis of chancroid is necessary.

THE TREATMENT OF PNEUMOCOCCIC MENINGITIS WITH PENICILLIN

LEWIS K. SWEET, M.D.

WASHINGTON, D. C.

EDITH DUMOFF-STANLEY, M.D.

BOSTON

HARRY F. DOWLING, M.D.

WASHINGTON, D. C.

AND

LIEUTENANT MARK H. LEPPER

MEDICAL CORPS, ARMY OF THE UNITED STATES

Pneumococcic meningitis remains as one of the acute infections most difficult to treat successfully. Before the introduction of the sulfonamides it was almost invariably fatal. Even with the very vigorous use of sulfonamides and type specific serums the results have been far from satisfactory. The case fatality rate has been reported to vary from 58 per cent¹ to 80 or 90 per cent,² depending on the type of case received in the institution in which the study was made. Since pneumococci are highly sensitive to small amounts of penicillin, and since this agent is very effective in pneumococcic pneumonia,³ much can be expected from its employment in pneumococcic meningitis.²

Our purpose in the present report is to detail our experience with the use of penicillin in the treatment of 16 patients with pneumococcic meningitis and to compare the results with those obtained in 40 consecutive patients treated with sulfadiazine or sulfamerazine.

The 56 patients under consideration were treated by us in the wards of the Gallinger Municipal Hospital or in the private practice of one of us between July 1, 1942 and Aug. 1, 1944. Forty patients were treated up to Dec. 20, 1943 with either sulfadiazine or sulfamerazine, with the addition of type specific antipneumococcic serum in 21 cases. The sulfonamide was started immediately after the spinal fluid obtained at the initial puncture had demonstrated the presence of the purulent meningitis or, in a number of instances, when the patient was admitted for the treatment of pneumonia before there was evidence of meningitis. The serum was given intravenously as soon as the type was known. In 13 of the patients the serum was given immediately because organisms could be typed directly from the initial spinal fluid. In 8 additional patients serum was given later after typing was completed or when the specific type of serum was obtained. The dose of serum varied from 65,000 to 825,000 units, with 15 of the 21 patients who were given serum receiving between 300,000 and 600,000 units.

Since Dec. 20, 1943, when penicillin became available to us, we have treated 16 patients. They received the

Lieutenant Lepper, of San Antonio, Texas, made his contribution to this paper before entering the Army of the United States. From the Infectious Disease Service and the George Washington Hospital, and the Departments of Washington University.

the Office of Scientific Research and by the Committee on Medical Research for clinical investigations recommended by the Committee on Chemotherapeutics and Other Agents of the National Research Council.

1. Hodes, H. L.; Smith, Margaret H. D., and Iekes, H. J.: Sixty Cases of Pneumococcic Meningitis Treated with Sulfonamides, *J. A. M. A.* 121: 1334-1337 (April 24) 1943.

2. Dingle, J. H., and Finland, M.: Diagnosis, Treatment and Prevention of Meningococcic Meningitis, with a Résumé of the Practical Aspects of Treatment of Other Acute Bacterial Meningitides, *War Med.* 2: 1-58 (Jan.) 1942. Dowling, H. F.; Dauer, C. C.; Feldman, H. A., and Hartman, C. R.: Pneumococcal Meningitis: A Study of Seventy-Two Cases, *New England J. Med.* 226: 1015-1018 (June 25) 1942.

3. Tillet, W. S.; Cambier, Margaret J., and McCormack, J. E.: The Treatment of Lobar Pneumonia and Pneumococcal Empyema with Penicillin, *Bull. New York Acad. Med.* 20: 142-178 (March) 1944.

same basic supportive care and in addition were given the sodium salt of penicillin either with or without sulfadiazine or sulfamerazine. Two patients also received antipneumococcic serum.

These two groups of patients have been compared on the basis of the following prognostic factors: (1) the age of the patient, (2) the site of the primary lesion leading to meningitis and (3) the number of organisms found in the first spinal fluid obtained after the onset of the meningitis. As shown in table 1, these groups are strikingly similar when examined in this way. In

TABLE 1.—Comparison by Age, Primary Lesion and Number of Organisms in the Original Specimen of Cerebrospinal Fluid of Patients with Pneumococcal Meningitis Treated with Sulfonamides and Those Treated with Penicillin

	Sulfonamide Group, Number Treated	Penicillin Group, Number Treated	Total Number Treated
Age:			
Under 10.....	6	2	8
10 to 39.....	8	3	11
40 and over.....	26	11	37
Primary lesion:			
	15	4	19
	4	2	6
	4	1	5
Head injury.....	2	1	3
Unknown.....	7	5	12
None.....	8	3	11
Number of pneumococci in initial cerebrospinal fluid:			
Sufficient for typing.....	30	12	42
Rare.....	7	3	10
Not recorded.....	3	1	4
Total.....	40	16	56

TABLE 2.—Comparison by Age, Primary Lesion and Number of Organisms in the Original Cerebrospinal Fluid of the Results of Treatment of Pneumococcal Meningitis with Sulfonamides and with Penicillin

	Sulfonamide Group		Penicillin Group		Total	
	Number Treated	No. Died	Number Treated	No. Died	Number Treated	No. Died
Age:						
Under 10.....	6	5	2	0	8	5
10 to 39.....	8	8	3	0	11	8
40 and over.....	26	24	11	9	37	33
Primary lesion:						
	15	13	4	3	19	16
	4	4	2	0	6	4
	4	4	1	1	5	5
Head injury.....	2	2	1	0	3	2
Unknown.....	7	7	5	5	12	12
None.....	8	7	3	0	11	7
Number of pneumococci in initial cerebrospinal fluid:						
Sufficient for typing.....	30	29	12	8	42	37
Rare or absent.....	7	5	3	0	10	5
Not recorded.....	3	3	1	1	4	4
Total.....	40	37	16	9	56	46

each group approximately two thirds of the patients were 40 years of age or over. It is well known that the prognosis is worse in these older patients.

Pneumonia was the most frequent primary lesion detected, being present in 38 per cent of the sulfonamide group and in 25 per cent of the penicillin group. Endocarditis was present in 10 and 6 per cent of the two groups respectively, and head injuries in 5 and 6 per cent. No antecedent focus was demonstrated, because the patient was too critically ill on admission to give a satisfactory history, in 18 and 31 per cent of the two groups respectively. When meningitis originates from any of these primary sites, or when the patient is too ill for the primary lesion to be discovered, the out-

look is usually very poor. In only 30 and 32 per cent of the respective groups was the meningitis primary or secondary to an otitis media or mastoiditis, with the relatively good prognosis that can be offered in such cases. Furthermore, the more organisms present in the initial specimen of spinal fluid, the poorer the prognosis. We found that in 75 per cent of each group there were a sufficiently large number of organisms in this specimen to allow immediate direct typing by the Neufeld technic. Therefore, according to all these criteria, these two groups were for the most part composed of patients whose illness was very severe and whose prognosis was poor, the general severity of the illness being as unfavorable in one group as in the other.

When we consider the results of the two types of treatment, however, there is a definite difference (table 2). Among the 40 patients treated with sulfonamides there were only 3 recoveries, whereas among the 16 patients who received penicillin there were 3 recoveries. All 3 patients who recovered under the older method of therapy had very mild cases of meningitis. They were never very toxic or completely comatose. In 1 of these patients there were sufficient organisms for Neufeld typing from the initial spinal fluid, but the pneumococci were not numerous; in 2 patients the organisms were demonstrated on culture only.

The patients who received penicillin are presented in detail in table 3. They are grouped in accordance with the concomitant treatment employed with penicillin and according to the route of administration of penicillin. The first 3 patients received penicillin both intrathecally and intramuscularly and received no sulfonamides. One patient (patient 3) recovered. This patient, a Negro woman aged 45, had severe meningitis secondary to mastoiditis. Her mastoid was drained surgically and she was given very large doses of penicillin intrathecally twice daily for a week. Her spinal fluid became sterile but a pronounced pleocytosis persisted, the dextrose level was very low, the patient's fever remained high and her general condition remained poor. Intramuscular penicillin was then started, and the patient immediately began to improve.

The second group of 5 patients (4 to 8 inclusive) received intrathecal penicillin and sulfamerazine or sulfadiazine. There were 3 recoveries in this group. The meningitis in 1 of these 3 patients was primary and in the others was secondary to pneumonia and to otitis media. Penicillin was given in doses of 10,000 to 15,000 units twice daily for from three to ten days, then daily for periods of from twelve to thirty-two days. The average blood sulfonamide level for the 3 patients was approximately 14 mg. per hundred cubic centimeters. The meningitis in these 3 patients was relatively less severe than the average of the group. Furthermore, in none of them were organisms present in adequate numbers for immediate typing. Accordingly, while it is highly improbable that all of them would have recovered on sulfonamide therapy alone, we cannot assume that the choice of therapeutic agents used in their treatment is the optimal one for all cases.

The remaining 8 patients received penicillin both intrathecally and intramuscularly and also received sulfonamides. Three patients recovered. One was a Negro woman aged 29, who had a severe meningitis without evident antecedent focus. She received intrathecal penicillin for twenty-seven days and then, after evidence of a neurologic lesion developed (which will be discussed

later) was given intramuscular penicillin for an additional seven days. As the meningitis was essentially well when the intrathecal penicillin was discontinued, this patient might be considered as another patient cured by penicillin intrathecally in combination with sulfamera-

penicillin intrathecally and intramuscularly for forty-six and forty-eight days respectively. During this time there were several periods of remission of the disease, but on each occasion a reduction of the dosage of penicillin was followed by an immediate exacerbation

TABLE 3.—Analysis of Sixteen Patients with Pneumococcic Meningitis Treated with Penicillin

Case No.	Race	Sex	Age	Primary Lesion	Type of Pneumococci	Penicillin										Other Treatment	Outcome and Comment
						Intrathecal				Parathecal *							
						Dose †	Frequency	Time	Total Dose ‡	Dose †	Frequency	Time	Total Dose ‡				
1	W	♀	50	Pneumonia	7	40	q 12 h.	30 h.	120	30	q 3 h.	30 h.	300	None	Died		
2	W	♂	67	Unknown	29	25	.....	Once	115	30	q 3 h.	51 h.	755	None	Died	
						10	Twice d.	4½ d.		25	q 3 h.	9 h.					
										10	q 3 h.	42 h.					
3	O	♀	45	Mastoiditis	3	40	Twice d.	7½ d.	980	0	.....	6 d.	3,420	None	Recovered	
						20	Twice d.	2½ d.		30	q 3 h.	8 d.					
						40	Daily	7 d.		20	q 3 h.	7½ d.					
										15	q 3 h.	2½ d.					
4	O	♂	48	Pneumonia	7	15	.....	Once	215	..	.....	.....	.....	Sulfamerazine B. L. 14	Recovered
						10	Twice d.	1 d.									
						15	Twice d.	2 d.									
						15	Once d.	8 d.									
5	O	♂	48	Unknown	7	10	.....	Once	10	..	.....	.....	.....	Sulfadiazine B. L. 14	Died
6	W	♀	13	Otitis media	18	10	Twice d.	5½ d.	200	..	.....	.....	.....	Sulfamerazine B. L. 14	Recovered
						10	Once d.	9 d.									
7	W	♂	48	Unknown	25	10	Twice d.	4½ d.	290	..	.....	.....	.....	Sulfamerazine B. L. 10	Died
						10	Daily	3 d.									
						10	Twice d.	5 d.									
						10	Daily	7 d.									
8	O	♂	31	None	29	10	Twice d.	10 d.	565	..	.....	.....	.....	Sulfamerazine B. L. 15	Recovered
						20	Daily	1 d.									
						10	Twice d.	1 d.									
						20	Daily	12 d.									
						15	Daily	3 d.									
						10	Daily	5 d.									
9	O	♀	1½	Head injury	6	10	Daily	11 d.	670‡	20 IV.	Stat.	Once	.....	200,000 units type 6 antipneumococci serum.	Recovered but had mental deterioration	
						5	Daily	5 d.		2.5 IV.	q 1 h.	8 h.	40 IV.	Sulfadiazine started on 46th day of treatment			
						0	.....	2 d.		15 IM.	q 3 h.	21½ d.	10,210 IM.	B. L. 13		
						5	Daily	6 d.		10	q 2 h.	37½ d.					
						0	.....	1 d.		10	q 3 h.	21 d.				
						0	Daily	2 d.		5	q 2 h.	2½ d.					
						0	.....	1 d.		5	q 3 h.	5 d.				
						5	Daily	1 d.									
						10	Daily	48 d.									
10	W	♀	2 mo.	None	12	25	Daily	1 d.	1,465‡	20 IV.	Stat.	Once	20 IV.	200,000 units type 12 antipneumococci serum.	Recovered but had mental deterioration		
						15	Twice d.	3 d.		15 IM.	q 3 h.	5½ d.	12,620 IM.	Sulfadiazine started on 48th day of treatment			
						15	Daily	10 d.		10	q 3 h.	1 d.					
						0	.....	1 d.		15	q 3 h.	15 d.				
						15	Daily	11 d.		10	q 2 h.	38 d.					
						0	.....	1 d.		10	q 3 h.	2½ d.				
						15	Daily	4 d.		15	q 3 h.	4 d.					
						7.5	Daily	2 d.		10	q 2 h.	39 d.					
						15	Daily	11 d.		5	q 2 h.	3 d.					
						10	Daily	2 d.									
						15	Daily	49 d.									
						10	Daily	3 d.									
						5	Daily	2 d.									
11	W	♀	62	Unknown	8	30	Daily	2 d.	60	50 IV.	.....	Once	50 IV.	Sulfadiazine B. L. 0.5	Died	
										20 IM.	q 3 h.	19 h.	140 IM.				
12	W	♀	75	Pneumonia	8	10	q 12 h.	2 d.	40	30	q 3 h.	24 h.	240	Sulfadiazine B. L. 23	Died		
13	O	♀	29	None	12	20	Twice d.	10 d.	1,270	0	.....	27 d.	1,740	Sulfamerazine B. L. 12	Recovered	
						15	Twice d.	1½ d.		30	q 3 h.	7¼ d.					
						20	Daily	1 d.									
						15	Twice d.	1 d.									
						20	Twice d.	1 d.									
						20	Daily	4 d.									
						20	Twice d.	6 d.									
						40	Twice d.	3½ d.									
14	O	♂	45	Endocarditis	12	15	Twice d.	4½ d.	300	0	.....	10 d.	1,390	Sulfamerazine B. L. 12	Died suddenly of heart disease after the meningitis had cleared	
						15	Daily	11 d.		30	q 4 h.	7 d.					
15	O	♂	45	Pneumonia	18	20	q 12 h.	Once	40	30	q 3 h.	9 h.	120	Sulfamerazine B. L. 2.4	Died		
						10	q 12 h.	2 doses									
16	O	♂	42	Unknown	3	30	.....	Once	30	20	q 2 h.	10 h.	120	Sulfadiazine B. L. not done	Died	

* Parathecally penicillin was given intramuscularly unless otherwise stated

† Dosages of penicillin expressed in thousands of Oxford units.

‡ Almost all of this penicillin was given into the lateral cerebral ventricles.

Symbols: B. L., average blood level of sulfonamide expressed in milligrams per cent; q 3 h., every three hours; IV., intravenously; IM., intramuscularly; h., hours; d., days or daily.

zine. Two of the patients who recovered were infants. In 1 the primary lesion was a head injury. This was complicated first by a pneumonia and bacteremia, then by meningitis. In the other infant the meningitis was a primary infection. Both infants received large doses of

of the meningitis. Thereafter a combination of sulfadiazine and penicillin was used for forty-one and sixty days respectively. Both infants recovered, but not until after pronounced cerebral atrophy with resultant mental deterioration had developed. Of the other 5 patients

of fluid administered, however, must always be from 5 to 15 cc. less than the amount of cerebrospinal fluid withdrawn. Finally, intrathecal penicillin should be discontinued as soon as the patient shows a continuing favorable reaction, while parathecal penicillin and sulfonamides should be continued for several days more.

SUMMARY AND CONCLUSIONS

1. Sixteen patients with pneumococcic meningitis were treated with penicillin (with or without sulfonamides) with nine deaths. Among 40 patients treated with sulfonamides and no penicillin there were thirty-seven deaths. The two groups were shown to be very similar as regards the factors which are important in evaluating the prognosis.

2. The duration of treatment with penicillin varied from twelve to one hundred and eight days in the recovered patients.

3. Two patients developed mild and 2 developed severe neurologic symptoms associated with the administration of the penicillin. All of these patients recovered before leaving the hospital.

4. It is concluded that the optimal treatment of pneumococcic meningitis should include the use of penicillin and sulfadiazine or sulfamerazine. The penicillin should be given both intrathecally and systemically.

PYELOCYSTOSTOMOSIS

REPORT OF TWO CASES

ELMER HESS, M.D.

ERIE, PA.

AND

B. W. WRIGHT, M.D.

NASHVILLE, TENN.

It is often necessary to divert the urinary stream while an obstructive lesion is corrected. This, in reality, is one of the fundamental principles of certain surgical procedures on the urinary excretory apparatus. The obstructive untreated uropathies will eventually destroy the renal parenchyma. If the obstruction can be relieved in whole or in part after a definitely increasing nephrosis is discovered, the recovery of the renal parenchyma is one of the amazing features of the convalescent period.

No matter how badly damaged the renal parenchyma may seem to be, none of these cases are necessarily hopeless, even if a single renal mass is the only renal substance that can be found. We have all seen cases in which life has been indefinitely prolonged, with normal blood chemistry balance and only infinitesimal amounts of glomerular tissue clinging to the renal capsule. Equally if not more amazing is the ability of a nephrotic kidney to assume normalcy, or near normalcy, after the complete relief of obstruction. Often, however, the condition of the patient does not warrant an immediate attack on the obstruction itself. It is therefore expedient to short-circuit the urine until recovery of the renal function assures some chance for success. Temporary procedures to bring the urine to the surface of the body have been devised and used by all of us. Occasionally certain conditions arise in which obstructions above the bladder may be relieved by such a short-circuiting within the body. This should

be preferable. In these situations anomalous organs must be handled with discretion, and this is more important when the patient has only a single renal mass, whether this mass is a solitary, a fused or a horseshoe kidney.

In these cases the very life of the patient depends on the diagnostic ability, skill, experience and ingenuity of the urologic surgeon. If a surgical procedure can be planned that would temporarily sidetrack the urinary stream within the body, bypassing the obstruction, then one operation might suffice and the renal function might be indefinitely prolonged.

Many successful attempts to reimplant ureters into the bladder have been reported, but only 2 cases are now on record in which the hydronephrotic renal pelvis has been successfully anastomosed directly to the urinary bladder to bypass permanently a ureteral obstruction. The first time this operation was performed it was a "must" at the operating table. Necessity in this case proved to be the mother of invention. The second case was deliberately planned and successfully executed and these 2 cases, we believe, are unique in the annals of urologic surgery. The operations about to be described open a new avenue of approach to the treatment of certain types of nephrosis.

In 1929 one of us reported a very unusual experience. Faced with a huge hydronephrosis in the left half of a horseshoe kidney which could not be relieved by cystoscopy, an operation was created at the operating table which was designated pyelocystostomosis. The successful relief of the condition was completely reported before the meeting of the American Urological Association in 1929. Herewith are appended the drawings of the technic of this particular procedure and the x-ray examination, postoperatively, showing the patient's fistula between the pelvis of the kidney and the posterior fundal wall of the bladder.

At the time of operation this patient was 9 years of age. He was discharged from the hospital with a most satisfactory clinical result. Fourteen years later, in 1943, the patient, now an adult, was examined by the draft board and told the draft surgeon such a fantastic story that he was sent back to the clinic for confirmation and advice.

Prior to his operation in 1929 the boy had not been too bright but since operation had improved immeasurably, mentally, and had completed his required school work and was now employed in a defense plant. His story was that he had been in good health ever since and had developed as any normal boy. At the time of his examination he was perfectly well, with normal urinary output and control and had no symptoms. He did refuse cystoscopy and so check-up pyelograms are not available. His argument was Why go through a very disagreeable examination when he was in perfect health? Here, then, is a man who has lived for fourteen years following a procedure that, to the best of our knowledge, had never previously been done.

In 1943 a second case in which a similar situation existed, except that the kidney was a solitary one, came under the care of the co-author of this paper.

The patient, aged 42, was married and the father of 1 child. A diagnosis of hydronephrosis in a congenital ectopic solitary kidney was made. The condition was relieved the first time by ureteral catheterization. Three weeks later the patient again had an acute hydronephrosis and 6 ounces of urine was drained out of this hydronephrotic pelvis, with complete relief of symptoms. Thirteen days after this second admission a third

attack of hydronephrosis was accompanied by severe colicky pain in the lower part of the abdomen and suppression of urine. The nonprotein nitrogen was 106.0 and the creatinine was 7.2 mg. per hundred cubic centimeters of blood. His blood pressure had risen to 210/110 as compared to 132/94 when he was first admitted to the hospital. He had a severe headache, visual disturbances, vertigo, mental dulness and hiccups, with an obviously pending uremia. Again, cystoscopic ureteral catheterization relieved the hydronephrosis, but on August 16 it was decided to short-circuit the urine

The posterior parietal peritoneum was incised in the midline and stripped from the kidney and the posterior wall of the bladder. The lower border of the renal pelvis was first attached to the lower part of the posterior wall of the bladder by several interrupted sutures of catgut, the purpose being to protect the anastomosis from undue tension. An extraperitoneal, suprapubic cystostomy was then done, through which the finger was introduced for guidance. Corresponding vertical incisions, each 3.5 cm. long, were made in the bladder and the renal pelvis, and these were sutured together

with catgut in the same manner as is employed in a gastrojejunostomy. This produced a communication between the bladder cavity and the interior of the renal pelvis through which the index finger could be easily passed without constriction. The posterior parietal peritoneum was sutured over the united kidney and bladder and the abdominal cavity was then closed without drainage. A Pezzer catheter was sutured in the cystostomy opening with a pursestring of catgut and provided extraperitoneal drainage of the bladder. The wound in the abdominal wall was closed in the usual manner.

The patient made an uneventful recovery, and the wound healed by first intention. The only difference between this operative procedure and the first anastomosis that was done was the drainage of the cystostomy with a Pezzer catheter (in the first case drainage was effected by catheter through the urethra, and the bladder wall was closed by suture). Normal urination was reestablished on the twentieth postoperative day, and the patient was discharged on the twenty-fourth postoperative day with a blood pressure of 116/70.

Four months after his operation the patient resumed his occupation and felt well. His blood pressure had increased to 155/115. One month later examination revealed many pus cells and a heavy trace of albumin in the urine, with a slight rise of afternoon temperature.

At that time cystoscopy showed the stoma to be open, and through it a No. 5 catheter was passed into the kidney and the pelvis was lavaged with 1:5,000 silver nitrate solution. Daily irrigations of the

bladder and kidney through a soft rubber catheter in the urethra, using a silver solution, rendered the urine practically pus free after a week, but the urine continued to show some red blood cells and a trace of albumin. A cystogram at this time showed a definite diminution in the size of the kidney pelvis. The blood pressure was 130/90. The blood nonprotein nitrogen was 50 mg. and the creatinine 3.5 mg. The patient left for his home in a neighboring city, feeling quite well and ready for work.

This patient's nitrogen retention remains higher than normal but it is apparently fixed, as there has been

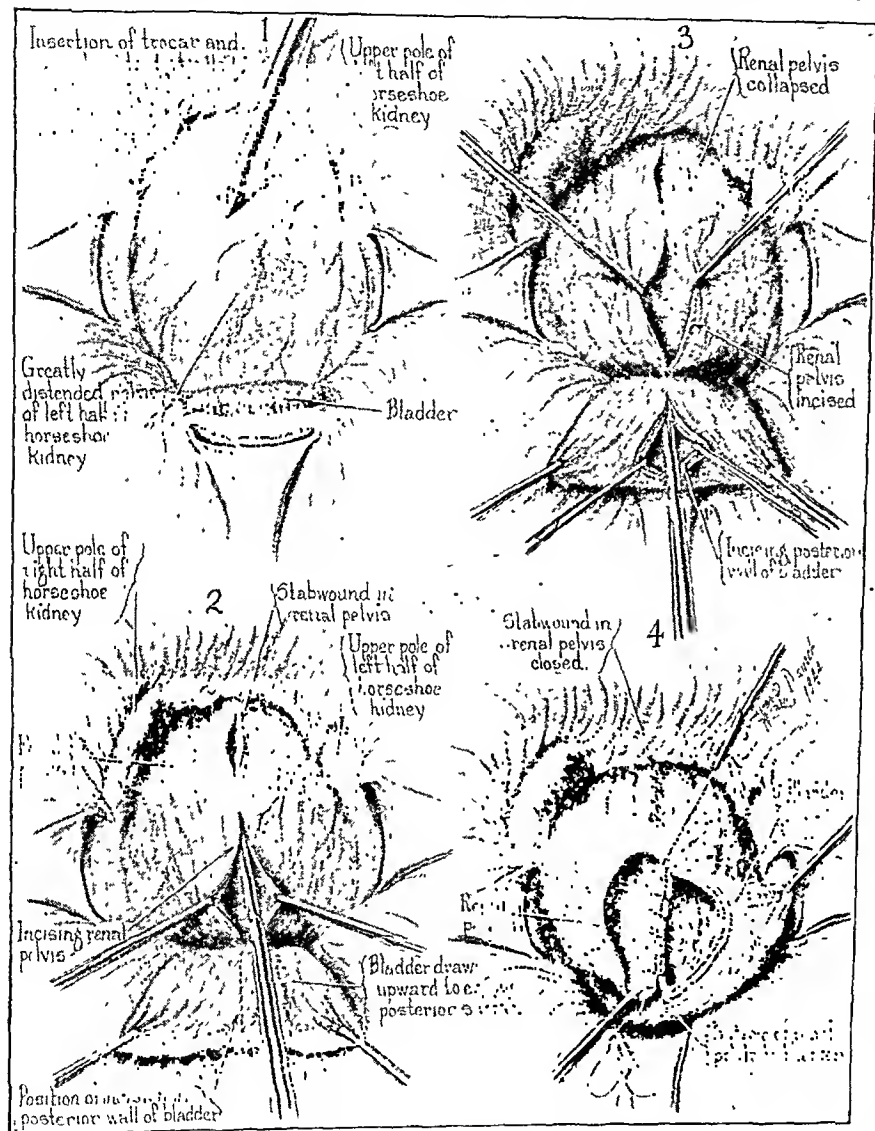


Fig. 1.—1. Bladder and hydronephrosis exposed through a midline incision. 2. Line of incision in the posterior wall of the bladder and the incision in the pelvis. 3. Relationship of the incision in the posterior wall of the bladder and the nephrotic pelvis. 4. Method of anastomosing the pelvis to the bladder.

by attempting to anastomose the hydronephrotic sac directly to the urinary bladder. The ectopic kidney could be seen and felt beneath the posterior peritoneum, in front of the first portion of the sacrum. A careful search failed to reveal another kidney or a missing testicle. The right ureter was a blind pouch; the left ureter entered the hydronephrotic pelvis on its upper left anterior surface and was sharply angulated at the ureteropelvic junction. The long axis of the kidney was horizontal. The blood supply to the kidney was typical of that seen in ectopias and came from the abdominal aorta.

no appreciable change in the past four months. His future is apparently dependent on how well his urinary infection is controlled and whether or not the low grade pyelonephritis is progressive. At present he seems to owe his life to the pyelocystostomy.

COMMENT

It is perfectly feasible, under certain clinical and anatomic conditions, to plan deliberately and execute the direct anastomosis of the renal pelvis and the urinary bladder. If the proper indications are the directive, the operative procedure should be a success and a secondary operation to relieve the obstruction unnecessary. The advantages when such a procedure is practical are obvious, as the drainage of the kidney is within the body to the natural receptacle for the urine and immediately does away with all of the discomforts incident to urinary drainage to the body surface.

The indications for the operation are limited, but it is definitely indicated in large hydronephroses which cannot be relieved by ureteral catheterization and where for one reason or another the remaining renal parenchyma must be preserved. The size and position of the hydronephrotic organ must be such as to make the attempt at anastomosis feasible.

A single pelvic kidney acutely obstructed, a horseshoe kidney one side of which is acutely obstructed, or a single kidney with a huge nephrosis may be handled in this manner and the result will be far more acceptable to the patient than a nephrostomy which is drained through the loin. However, if the nephrotic sac isn't large enough to be easily anastomosed, the nephrostomy will be a far better surgical approach. Then there may be



Fig. 2—Cystopyelogram showing the anastomosis between the bladder and the pelvis of the kidney; anteroposterior view, postoperatively.

several other combinations of conditions that may arise that would make an operation of this kind feasible, even though a normal kidney might be on the opposite side. In each of these cases reported there is a slight difference in operative technic, but in the main they are the same.

Drawings of the technic of both operations are presented for comparison, and we hope that this report of our experiences will stimulate others who, from time to time, are faced with such a problem to attack the situation fearlessly and with full hope of surgical success. In these 2 cases there is demonstrated a new

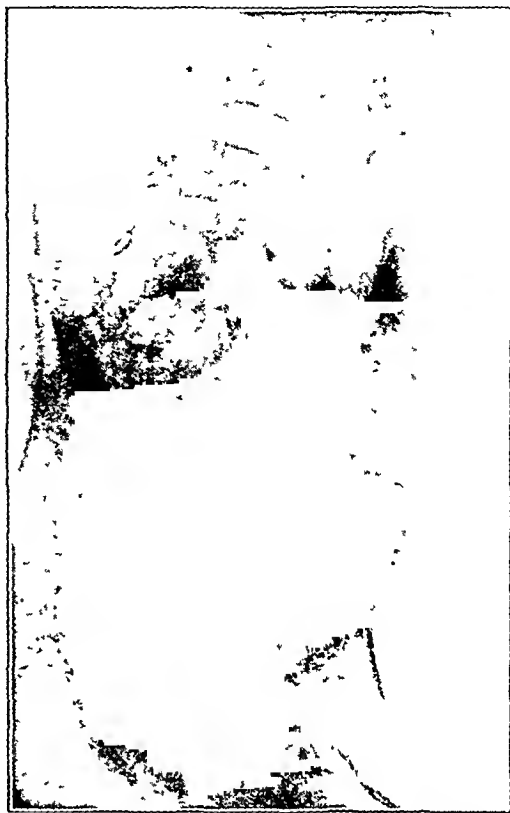


Fig. 3—Cystopyelogram showing the anastomosis between the kidney and the bladder, lateral view, postoperatively.

surgical operation. True, its indications are limited; but its value as a life saving procedure has been twice demonstrated. The operation is presented for your consideration as an additional weapon in our struggle to relieve distress and prolong life.

8 East Twelfth Street.

ABSTRACT OF DISCUSSION

DR. EDGAR BURNS, New Orleans: Since drainage is usually defective in such cases, one would expect hydronephrosis to be a frequent lesion. In the records at Charity Hospital in New Orleans I found 12 cases of ectopic kidneys. Two of these patients had dilated renal pelvises. The 2 cases reported by Drs. Hess and Wright certainly presented unusual problems. Obviously in the performance of the type of operative procedure they have outlined the principles of plastic surgery must be rigidly adhered to; perhaps the most important of these is freedom from tension. In order to insure adequate drainage it seems desirable to make the anastomosis as large as the size of the renal pelvis and its proximity to the bladder will permit. Otherwise the same situation might develop as is found in a diverticulum of the bladder the opening of which is too small to permit complete emptying. Although these 2 patients were men, the same situation might be encountered in women. The relationship of the uterus to the bladder and the usual site of an ectopic kidney would probably make it more difficult to accomplish the anastomosis in such cases. Even if the anastomosis could be made, the possibility of subsequent disease of the uterus would create a hazard that might prove disastrous in later years. How should the uterus be handled in such cases? From a study of Dr. Hess's case it is apparent that

the normal variations in intravesical pressure have had no influence on renal function, but I should like some comment on that point. Another point is that of obstruction to the urinary outlet. Unquestionably, back pressure would lead to more rapid destruction of renal function than is encountered when the kidneys are in the normal position. This applies especially to men who are liable to develop prostatic hypertrophy. Dr. Wright's patient is approaching that age.

DR. B. W. WRIGHT, Nashville, Tenn.: This patient is intelligent and cooperative, and I have examined him by cystoscope a number of times since the anastomosis was made. The stoma is perfectly visible and patent. It looks like the opening of a diverticulum. I have on several occasions passed a catheter transvesically through the stoma and into the renal pelvis and lavaged it. When this patient's bladder is irrigated through a urethral catheter he is conscious of and easily identifies the sensation of a distended kidney. For the first few months after he was up and about I taught him to manipulate his renal pelvis in the Credé manner, and he found that he could void, and then by pressing on his abdomen he would be able to pass some more urine, which undoubtedly was that retained in his renal pelvis. Now he is no longer able to get this second voiding, and I think it is consistent with the contracture of the pelvis. The obstruction in his case was due to the high implantation and sharp angulation of the ureter and at the operation, when we had two catheters in the ureter and filled the kidney pelvis, it seemed that the more we distended the pelvis the more acute and complete was the obstruction. Just what additional complications and problems will arise if he develops an obstruction at his bladder neck or distal thereto remain to be seen.

PENICILLIN THERAPY IN RAT BITE FEVER

W. A. ALTEMEIER, M.D.

HARRY SNYDER, M.D.

AND

GERTRUDE HOWE, M.D.

CINCINNATI

Rat bite fever is a peculiar and relatively rare disease of man which occasionally develops after the bite of a rat. There is some evidence that this condition has been known in India for two thousand three hundred years and that India may have been its source. Modern medical literature on this subject began with the report of Wilcox in 1840, who recorded a group of symptoms that followed the bite of a rat. Since then case reports have been published in nearly all of the countries of the world, including Asia, Japan, Europe, England, North and South America, Hawaii and Australia. In the United States the disease has now been reported in twenty-eight states and the District of Columbia, but the incidence has been greatest in Ohio, Pennsylvania, New York and Illinois. In spite of its worldwide distribution, an epidemic spread of rat bite fever has never been recorded. It is primarily an invasive wound infection, and this explains its sporadic occurrence.

The wild rat is the chief animal vector, and more rarely the dog, cat, pig, mouse, laboratory white rat and weasel may be the source of infection. Evidence is lacking that the flea or any other insect is concerned in transmission of the infection.

There are at least two distinct types of rat bite fever: (1) "sodoku," shown by Futaki and others to be caused by *Spirillum minus* (or *Spirocheta morsus muris*), and (2) septicemia produced by *Streptobacillus*

moniliformis, otherwise known as *Haverhillia multi-formis* or *Streptothrix muris ratti*.

Sodoku is the endemic Japanese or Oriental form, and cases of this type have been much more prevalent than the streptobacillary type seen in the United States. In fact, we have found reports of only 17 proved cases of rat bite fever produced by *Streptobacillus moniliformis*.

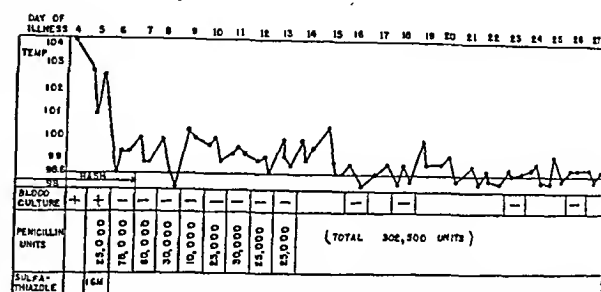


Fig. 1.—Course in case of rat bite fever due to *Streptobacillus moniliformis*; incubation period, ten days; rash, first six days; local inflammation absent; lymphangitis and adenitis (local) absent; arthritis absent; Kahn reaction negative.

Although it might be expected that the clinical picture would vary according to the etiologic agent, such a clinical differentiation has not been clearly established. The similarities between the two types of rat bite fever have led to their being considered variants of the same disease, and this has led to much confusion. In 1940 Allbritten, Sheely and Jeffers¹ reviewed the accessible literature and indicated certain features that tended to differentiate the spirillar from the streptobacillary form. We have summarized the essential features of the two types in table 2, using data obtained from reported cases and our own experience.

Although it has been shown repeatedly that the spirillar form responds very well to arsenical therapy, particularly with neoarsphenamine and sulfarsphenamine, no satisfactory chemotherapeutic agent has been found for the streptobacillary type. The arsenical compounds have been helpful in some cases and of no value in others. Sulfonamide therapy has also been ineffective.

During the summer of 1943 we had the unusual opportunity of treating with penicillin 3 cases of rat

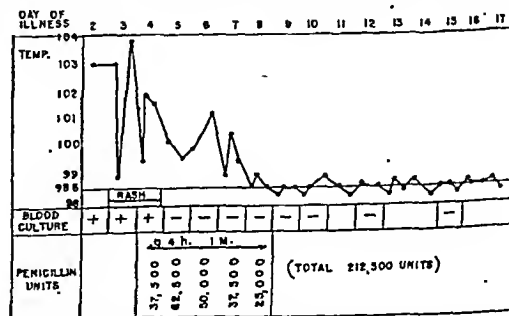


Fig. 2.—Course in case of rat bite fever due to *Streptobacillus moniliformis*; incubation period, one day; rash slight on third and fourth days; local inflammation mild; local lymphangitis and adenitis mild; history of lymphangitis; arthritis absent; Kahn reaction negative; complication, gastroenteritis.

bite fever produced by *Streptobacillus moniliformis*, and the case reports are recorded:

CASE 1.—A. M., a white girl aged 10 months, admitted to the Children's Hospital on July 1, 1943, two weeks previously had been bitten by a large brown rat on the left hand

From the Department of Surgery, University of Cincinnati, and the Department of Pediatrics of the Children's Hospital. The work described in this paper was done under a contract recommended by the Committee on Medical Research between the Office of Scientific Research and Development and the University of Cincinnati.

1. Allbritten, F. F., Sheely, R. F., and Jeffers, W. A.: *Haverhillia multi-formis*, Its Etiologic and Clinical Relationship to Rat Bite Fevers, J. A. M. A. 114: 2360 (June 15) 1940.

and right foot. Within ten days she developed high fever and a cutaneous rash, which began on the face and spread rapidly over the body and extremities. At the time of admission she was acutely ill and her temperature was 103.6 F. by rectum. A fine red maculopapular rash was distributed generally over the body, including the palms of the hands and soles of the feet. The tooth marks on the hand and foot did not appear inflamed, and there was no regional lymphangitis or lymphadenitis. A mild generalized lymphadenopathy was present, however.

The white blood cell count was 17,500 per cubic millimeter with 62 per cent polymorphonuclears and 38 per cent lymphocytes. The Kahn test and urinalysis were negative.

During the first twenty-four hour period of hospitalization a total of 1 Gm. of sulfathiazole was administered. At this time the blood culture taken on admission was reported positive for *Streptobacillus moniliformis*. Sulfathiazole therapy was discontinued, and treatment with penicillin was started. At intervals of four hours 12,500 units of sodium penicillin was given intravenously for two and one-half days. For six days thereafter smaller doses of 5,000 units were given intramuscularly, a total of 302,500 units being administered in the eight and one-half days. Twenty-four hours after the onset of penicillin therapy

12,500 units of sodium penicillin every four hours intravenously or intramuscularly the first forty-eight hours. Treatment was continued for four and one-half days, a total of 212,500 units being given (fig. 2).

All blood cultures after the start of penicillin therapy were negative, while all before had been positive. The rash disappeared within twenty-four hours, and the temperature fell gradually during the following three days. The temperature

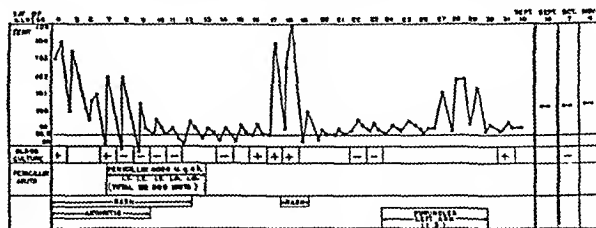


Fig. 3.—Course in case of rat bite fever due to *Streptobacillus moniliformis*: incubation period, three days, local inflammation slight, regional lymphangitis questionable; Kahn reaction negative.

TABLE 1.—Essential Features of Spillular and Streptobacillary Types of Rat Bite Fever

	Spillular	Streptobacillary
1. Common geographic location	Orient, Europe	America, Europe
2. Incubation period, .	1-3 weeks	1-3 days usually
3. Bite wound	Exacerbation with development of local swelling, pain and purplish red discoloration 1-3 weeks after bite; chancre like ulcer develops	Usually heals readily
4. Cutaneous rash	Usually distinct; large macular or papular, never petechial	Fine maculopapular, morbilliform or petechial; may involve skin of palms (fig. 4)
5. Arthritis . .	Usually absent	Commonly present
6. Regional lymphangitis and lymphadenitis	Present	May be present
7. Blood cultures	Negative	Positive for <i>Streptobacillus moniliformis</i>
8. Wassermann reaction	Usually negative	Negative
9. Kahn reaction	Tends to become positive at end of fourth week	Negative
10. Polymorphonuclear leukocytes	Present	Present
11. Secondary anemia	Present	Present
12. Arsenotherapy . .	Prompt response	Little or no response
13. Sulfonamide therapy	No data	Little or no response

the blood culture was negative and remained so. At the same time the temperature fell sharply, the rash disappeared and the child made a rapid recovery without evidence of relapse, complication or sequela. She was discharged on July 29, 1943 and has had no recurrence (fig. 1).

CASE 2.—R. F., a white boy aged 2 months, was admitted to the Children's Hospital on Aug. 2, 1943 with a history of having been bitten by a large brown rat in several places about the right ankle. Twenty-four hours after the bite he developed high fever and a "red streak" on the injured leg.

On admission the infant appeared acutely ill and had a temperature of 103 F. by rectum. There were tooth marks on the right foot and ankle and a mild inflammatory reaction about them. Regional lymphangitis was present, but the inguinal glands were not enlarged or tender. No rash was present at first, but a few macules were seen on the feet the day following admission.

The white blood cell count was 13,400 per cubic centimeter with 71 per cent polymorphonuclears. The urinalysis and Kahn tests were negative.

Blood cultures taken on the day of admission and the two days following were positive for *Streptobacillus moniliformis*. Penicillin therapy was started on the third hospital day with

response may have been influenced in part by the development of diarrhea, which seemed to have no relation to the therapy. The infant suffered no relapse and was discharged well on August 21. Follow-up observations have shown that he has had no recurrence.

CASE 3.—J. T., a white girl aged 4½ years, was admitted to the Cincinnati General Hospital on Aug. 13, 1943 with a history of having been bitten on the left hand by a rat seven days previously. Three days after the bite she developed chills and a fever of 102 F. One day later she developed a rash, and two days later she complained of pain in the hands, wrists, ankles and knees.

The temperature at the time of admission was 103 F. and the child appeared acutely ill, irritable and in pain. There was a fine maculopapular rash covering all the extremities and the face (fig. 4). There was swelling about the left hand and wrist but no evidence of inflammation about the tooth marks. A loud systolic murmur was audible over the precordium.

A white blood cell count was 9,200 per cubic millimeter and the urinalysis, Kahn and Weil-Felix tests, tuberculin test, electrocardiogram and teleoroentgenogram of the heart were all normal.

Blood cultures were positive for *Streptobacillus moniliformis* on the first day after admission, and penicillin therapy was started with 4,000 units intravenously every four hours for three days and then intramuscularly for two more days. Unfortu-

TABLE 2.—Susceptibility *In Vitro* of *Streptobacillus Moniliformis* to Action of Penicillin in Broth Mediums

Units of Penicillin per Cc. of Broth Mediums *	Growth of Strain from		
	Case 1	Case 2	Case 3
50 000	—	—	—
25 000	—	—	—
10 000	—	—	—
5 000	—	—	—
2 500	—	—	—
1 000	—	—	—
500	—	—	—
0 10	—	—	—
0 05	—	—	—
0 00 (control)	—	—	—

* Dextrose starch broth was used as the medium for the first two strains, and alkaline peptone broth containing 20 per cent rabbit serum was used for the third.

nately a total of only 132,000 units was available for treatment of this case. As in the previous 2 cases, the blood stream was promptly sterilized, but the rash and arthritis subsided in two and five days respectively. However, four days after the penicillin was discontinued the child suffered a relapse with recurrence of fever, rash and positive blood culture (fig. 3). This episode subsided spontaneously, and the child remained apparently well except for the development of furuncles on the left arm, which were apparently unrelated to the disease. Although the child seemed well, a blood culture was found to be positive

after ten days' incubation just before her discharge from the hospital. Subsequent examinations have shown that the child has remained well and the blood cultures have continued to be negative.

The *Streptobacillus moniliformis* isolated in each of the 3 cases was definitely susceptible in vitro to the bacteriostatic action of penicillin. The strain isolated from the first case was completely inhibited by concentrations of 0.05 unit of sodium penicillin per cubic centimeter of broth medium. The other two strains showed partial inhibition by 0.05 unit per cubic centimeter and complete inhibition by 0.10 unit per cubic centimeter (table 2).

to infants of 10 months and 2 months respectively. It would seem more practical to give 10,000 or 15,000 units every three hours for at least seven days in any future cases of rat bite fever treated with penicillin.

There is some tendency for this disease to clear up spontaneously after a varying number of relapses, and this feature makes the evaluation of therapeutic results especially difficult in such a small series of cases. In table 3 we have summarized the salient features of all reported cases of rat bite fever in the United States in which the diagnosis was made by recovery of *Streptobacillus moniliformis* from the blood or joint fluid. In all there have been 17 cases up to and including 1943,

TABLE 3.—A Summary of All Cases of Rat Bite Fever in the United States Due to *Streptobacillus Moniliformis*, with Diagnosis Verified by Recovery of the Organism

Case No.	Reported by	Year	State	Sex	Age	Source	Incubation Period, Days	Rash	Arthritis	Duration	Comment
1	Blake, F. G.: J. Exper. Med. 23: 39, 1916	1915	Mass.	♀	67	Rat bite	14	+	0	15 days (died)	Endocarditis due to <i>Streptobacillus moniliformis</i>
2	Tilston, W.: J. A. M. A. 66: 995 (April 1) 1916	1915	Conn.	♀	46	Rat bite	5-8	+	0	2 months	
3	Littler, W.: Tr. Sect. Path. & Physiol. A. M. A., 1917, p. 275	1916	Tenn.	♂	14	Rat bite	22	+	0	5 weeks	Prompt response to vaccine therapy
4	Littler, W.: Tr. Sect. Path. & Physiol. A. M. A., 1917, p. 275	1916	Tenn.	♂	3	Rat bite	14	+	Muscle aching	6 weeks	Prompt response to vaccine therapy
5	Dick, G. F., and Tunneliff, Ruth: J. Infect. Dis. 23: 183, 1918	1917	Ill.	♂	10	Weasel bite	14	+	0	Over 4 months	
6	Tunneliff, Ruth, and Mayer, Katherine: J. Infect. Dis. 23: 555, 1918	1918	Ill.	♀	13 da.	Rat bite	9	+	0	17 days (died)	
7	Dodd, Katherine: Boston M. & S. J. 104: 633, 1926	1923	Md.	♀	10	Rat bite	1	+	+	16 days	
8	Scharles, F. H., and Seastone, C. V.: New England J. Med. 211: 711, 1934	1934	Mass.	♂	Adult	Rat bite	5	+	+	13 days	
9	Farrell, E.; Nordi, G. H., and Vogel, J.: Arch. Int. Med. 64: 1 (July) 1936	1937	N. Y.	♀	40	Rat bite	14	+	+	8 weeks	Arthritis lasted about 8 months
10	Unpublished case, culled from the records of the Children's Hospital, Cincinnati	1938	Ohio	♂	3 mo.	Rat bite	2	+	+	20 days	
11	Allbritten, F. F.; Sheely, R. F., and Jeffers, W. A.: J. A. M. A. 112: 2360 (June 15) 1940	1938	Penn.	♂	21	Rat bite	2	+	+	21 days	Arthritis lasted 53 days
12	Dawson, M. H., and Hobby, G. L.: Tr. A. Am. Physicians 54: 329, 1939	1939	N. Y.	♂	Adult	Rat bite	"14-21"	+	+	"Weeks"	
13	Dawson, M. H., and Hobby, G. L.: Tr. A. Am. Physicians 54: 329, 1939	1939	N. Y.	♂	Adult	Rat bite	"14-21"	+	+	"Weeks"	
14	Brown, T. M., and Nunemaker, J. C.: Bull. Johns Hopkins Hosp. 70: 201, 1942	1939	Md.	♂	49	Rat bite	3	+	+	Over 60 days	Arthritis still present 2 years later
15	Brown, T. M., and Nunemaker, J. C.: Bull. Johns Hopkins Hosp. 70: 201, 1942	1941	Md.	♂	49	Rat bite	3	+	0	65 days	
16	Brown, T. M., and Nunemaker, J. C.: Bull. Johns Hopkins Hosp. 70: 201, 1942	1941	Md.	♂	21	Rat bite	2	0	+	75 days	
17	LATSON, C. L.: Pub. Health Rep. 56: 1941	1941	D. C.	♂	21	Rat bite	14	+	0	Over 10 days	

COMMENT

The first 2 cases of streptobacillary rat bite fever showed a prompt and dramatic response followed by complete recovery when small doses of penicillin were administered. Definite improvement in the general condition was associated with fall in the temperature and white blood cell count, disappearance of the cutaneous rash and sterilization of the blood stream within twenty-four hours. In the third case a similarly prompt but less complete response was obtained, but a relapse occurred after discontinuance of the penicillin therapy. Because of the temporary exhaustion of our supply of penicillin, a total of only 132,000 units was administered to a child of 4½ years. In the light of later experiences in chemotherapy with penicillin, this unquestionably was an inadequate amount. In the first 2 cases a total of 302,500 and 212,500 units was administered

although there have been many more in which a diagnosis was made on a clinical basis only. Two of the 17 patients died as a result of their disease, and 3 more were left with persistent arthritis lasting fifty-three days in case 2, eight months in case 9 and over two years in case 14. Experience has been similar in Haverhill fever, a disease caused by the same organism without the bite of a rat or other animal. It is also evident that the duration of fever varied from thirteen days in case 8 to over four months in case 5. From this evidence it would seem that the usual case of streptobacillary rat bite fever treated by agents other than penicillin remains febrile either continuously or intermittently for a period of three to eight weeks.

Comparing the case records of the previous 17 cases with those of our 3 cases treated with penicillin, we believe that there is definite evidence that penicillin i-

effective in the therapy of this disease in that it promptly sterilizes the blood stream, shortens the course of the disease and tends to prevent the crippling effects of persistent arthritis. This clinical impression is supported by the demonstration in vitro of the susceptibility to penicillin of the three strains of *Streptobacillus moniliformis* isolated. It is suggested that penicillin may be of value in the therapy of Haverhill fever, since this disease is apparently caused by the same organism.

SUMMARY

1. There are at least two forms of rat bite fever, one caused by *Spirillum minus* and the other by *Streptobacillus moniliformis*.

2. The type caused by *Spirillum minus* responds well to arsenical therapy, but no satisfactory chemotherapeutic agent has been available for the type produced by *Streptobacillus moniliformis*.

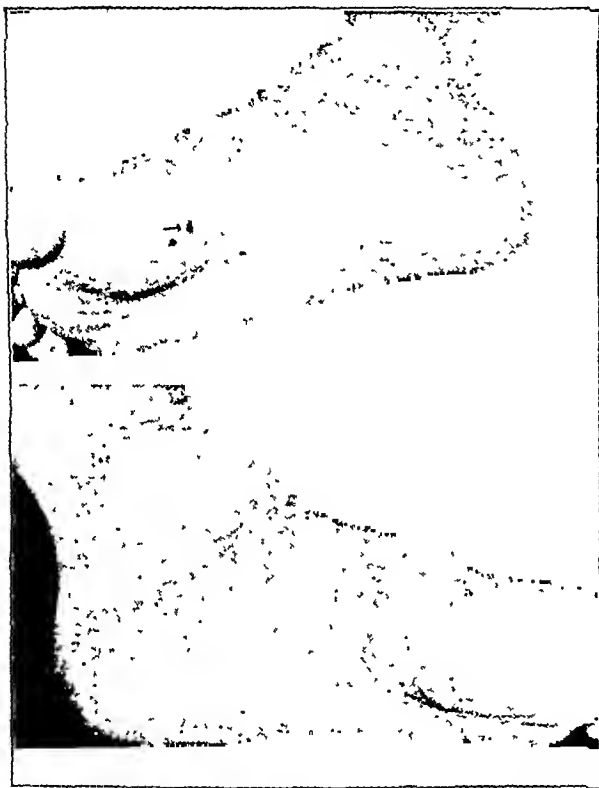


Fig 4—Tooth marks produced by the bite of a rat and the fine maculopapular rash of the skin of the foot, including the solar aspect (case 3).

3. A review of the literature reveals only 17 cases of rat bite fever due to *Streptobacillus moniliformis* in the United States in which the diagnosis was verified by recovery of the organism. Three more cases were treated for the first time with penicillin. The therapeutic response was prompt and permanent in the first 2 cases. In the third a relapse occurred after the administration of an inadequate amount of penicillin.

4. Studies in vitro indicated that penicillin has a powerful bacteriostatic effect on the three strains of *Streptobacillus moniliformis* recovered.

5. A comparison of the course of our cases with those previously reported gives the impression that penicillin is an effective chemotherapeutic agent which shortens decidedly the course of the disease.

6. In the future, treatment with penicillin is recommended in the therapy of rat bite and Haverhill fevers.

METABOLIC STUDIES IN PATIENTS
WITH CANCER OF THE GASTRO-
INTESTINAL TRACTXIX. THE ANEMIA OF PATIENTS WITH
GASTRIC CARCINOMA

ABRAHAM OPPENHEIM, M.D.

JULES C. ABELS, M.D.

GEORGE T. PACK, M.D.

AND

C. P. RHOADS, M.D.

NEW YORK

It is common clinical experience that patients with gastric carcinoma sooner or later develop anemia. The nature of this anemia, however, is not uniform, and variations from the macrocytic hyperchromic to the microcytic hypochromic disorders have been described. Indeed, it is not unusual to find that even in the same person the anemia may change its characteristics from month to month.

It is, of course, obvious that the existence of anemia preoperatively in these patients adds to the hazards of their operative and postoperative periods. There now is good evidence that anemia in patients submitted to prolonged surgical procedures may increase their tendency to shock states¹ and their susceptibility to infections, aggravate their usual hypoproteinemia,² impair wound healing and induce wound disruption.³ Although it is possible to repair this anemic state preoperatively by whole blood transfusions, this is only a transitory measure and its frequent repetition is not always feasible. It has been found in this hospital that the administration of whole blood to these patients induces a high incidence of febrile reactions and intravascular lysis, so that in some cases after the transfusion the blood count actually has fallen.⁴ Moreover, mere replacement therapy is not directed at the primary cause of the anemia and may mask a progressive disorder.

For these reasons it appeared to be desirable to study the nature and probable etiologic factors of the anemias in patients with adenocarcinoma of the stomach. The results of that investigation form the subject of the present communication.

METHODS

1. Hemoglobin concentrations were measured by the Sahli technic;⁵ 13.8 Gm. per hundred cubic centimeters of blood was arbitrarily set at 100 per cent. Blood counts were made in the usual manner. Anemia was considered to exist when the hemoglobin value was less than 80 per cent or the red cell count below 4.0 million per cubic millimeter. The normal color index was taken as from 0.9 to 1.1.

From the Memorial Hospital

Dr Oppenheim is trainee, National Cancer Institute

1 Evans, E. I.; Watson, J. G., III, and Hoover, M. J.: Studies on Traumatic Shock. The Restoration of Blood Volume in Traumatic Shock. *Surgery* 15: 420-431 (March) 1944.

2 Whipple, G. H.: Hemoglobin and Plasma Proteins Their Production, Utilization and Interrelation, *Am. J. M. Sc.* 203: 477-489 (April) 1942.

3 Thompson, W. D.; Ravdin, J. S. and Frank, J. L.: The Effect of Hypoproteinemia in Wound Disruption, *Arch. Surg.* 56: 500-508 (March) 1938. Colp, R.: Disruption of Abdominal Wounds, *Ann. Surg.* 99: 14-27 (Jan) 1934.

4 Abels, J. C.; Pack, G. T., and Rhoads, C. P.: Personal communication to the authors.

5 Todd, J. C., and Sanford, A. H.: Clinical Diagnosis by Laboratory Methods, Philadelphia, W. B. Saunders Company, 1943, vol. 10, p. 210

2. Marrow counts were made by the technic of Rhoads and Castle;⁶ the slides were stained with Jenner-Giemsa dye.

3. Mean erythrocyte volumes were ascertained by the method of Musser and Wintrobe.⁷ The normal range was considered to be from 80 to 94 cubic microns.

4. Urobilinogen was measured in the stools and urine as described by Watson.⁸ Total excretions greater than 200 mg. per day indicate an increased rate of intravascular lysis.

5. The existence of gastric free hydrochloric acid was ascertained in the manner of Gompertz and Cohen:⁹ 1 mg. of histamine phosphate was injected subcutaneously to stimulate acid secretion.

6. Blood loss at operation was measured by a method developed in this hospital.¹⁰

7. The fecal and urinary nitrogen and serum albumin and globulin were determined by a Kjeldahl procedure.¹¹

8. Plasma volume was ascertained by the technic of Gregersen and Stewart.¹²

CLINICAL MATERIAL

The occurrence and type of anemia were ascertained in 122 consecutively admitted patients with gastric cancer. Blood studies were made only after each

TABLE 1.—Relationship of Existence of Anemia to Site of Tumor

No. of Patients	Site of Tumor	Per Cent with Anemia
59	Lower third of stomach.....	64.5
15	Middle third of stomach.....	62.5
28	Upper third of stomach.....	70.0
10	All of stomach.....	62.0

patient had been in the hospital for several days and was considered to be well hydrated. Of this group (a) marrow counts were made in 10 patients with macrocytic anemia, (b) daily total urobilinogen excretions were measured in 10 instances, (c) blood loss at operation was determined in 20 instances, (d) an attempt to induce reticulocytosis by the administration of liver extract was made in 4 and (e) the effect of considerable nitrogen retention on hemoglobin synthesis was studied in 4 patients.

RESULTS

Of 122 patients with gastric cancer, 64 per cent had abnormally low red cell counts and concentrations of hemoglobin. This incidence agrees well with that (59 per cent) found in a previous study of 100 patients

6. Rhoads, C. P., and Castle, W. B.: The Pathology of the Bone Marrow in Sprue Anemia, *Am. J. Path.* 9: 813-826 (Oct.) 1933.
7. Musser, J. H., and Wintrobe, M. M., in Tice, F.: System of Medicine, Hagerstown, Md., W. F. Prior & Co., 1940, vol. 6, p. 795.
8. Watson, C. J.: Concerning Urobilinogen: I. An Improved Method for the Approximate Quantitative Estimation of Urobilinogen in Urine and Feces, *Am. J. Clin. Path.* 6: 458-475 (Sept.) 1936.
9. Gompertz, L. M., and Cohen, W.: The Effect of Smaller Doses of Histamine in Stimulating Human Gastric Secretion, *Am. J. M. Sc.* 177: 59-64 (Jan.) 1929.
10. Oppenheim, A.; Pack, G. T.; Ahels, J. C., and Rhoads, C. P.: Metabolic Studies in Patients with Cancer of Gastrointestinal Tract: XX. Blood Loss During Operative Procedures for Gastrointestinal Cancer, *Ann. Surg.*
11. Peters, J., and Van Slyke, D. D.: Quantitative Clinical Chemistry, Baltimore, Williams & Wilkins Company, 1931, vol. 1, p. 531. Robinson, H. W.; Price, J. W., and Hogden, C. A.: The Estimation of Albumin and Globulin in Serum, *J. Biol. Chem.* 120: 481-498 (Sept.) 1937.
12. Gregersen, M. J., and Stewart, J. D.: Simultaneous Determination of the Plasma Volume with T 1824 and "Available Fluid" Volume with Sodium Thiocyanate, *Am. J. Physiol.* 125: 142-152 (Jan.) 1939.

with the same neoplastic disorder.¹³ It is of interest to note that the site of the gastric tumor did not significantly affect the incidence of anemia in these individuals (table 1). Likewise, no definite correlation could be made between the existence of achlorhydria and the incidence or severity of the anemic state (table

TABLE 2.—The Existence of Gastric Achlorhydria in Patients with Gastric Cancer and Anemia

Per Cent of Patients Studied	Free HCl	Average RBC Million per Cu. Min.	Average Hemoglobin, per Cent
55	0	3.08	60.2
45	+	2.97	59.5

2). No attempt was made to correlate the occurrence and degree of the blood disorder with the probable duration of the neoplastic disease, for the latter factor could be estimated only very roughly by the onset of symptoms.

Of the 78 patients with anemia, the mean erythrocyte volume was macrocytic in 25, normocytic in 35 and microcytic in 18 (table 3). Of those with macrocytosis, hyperchromia, normochromia and hypochromia were found in 1, 24 and 0 respectively; of those with normocytosis all were normochromic, and of the cases of microcytic anemia 14 were normochromic and 4 hypochromic. Hence it would appear that, although the anemia of patients with gastric cancer varies widely with respect to the size of the red cells, the anemia in most instances is normochromic.

Microcytic anemia frequently may be the result of chronic blood loss or iron deficiency. Certainly there is reason to expect a gastric neoplasm to be the source of a continual and significant blood loss, and of the 18 patients with this type of hematologic disorder 10 either gave histories of or were found in the hospital to have a significant degree of gastrointestinal bleeding. This incidence of bleeding is considerably greater than that found for the patients with either normocytic or macrocytic anemia (table 4), but whether the total amount of blood lost by those with microcytosis was greater than that which occurred in the patients of the other groups cannot be estimated.

The anemia of these patients with microcytosis probably is not alone due either to a dietary deficiency

TABLE 3.—The Nature of the Anemia in Patients with Gastric Cancer

Hemoglobin Content of Erythrocytes	Patients with		
	Macrocytosis	Normocytosis	Microcytosis
Hyperchromic.....	1	0	0
Normochromic.....	24	25	14
Hypochromic.....	0	0	4

of iron or to an exceptionally great loss of it. This is suggested by the fact that the daily oral administration of 3 Gm. of ferrous sulfate for from thirty-eight to forty days to 3 of the patients with this type of hemogram increased the red cell counts only from 0.1 to 0.25 million and the concentrations of hemoglobin by from 6 to 13 per cent. At the end of this time all 3 still

13. Ariel, I.; Rekers, P. E.; Pack, G. T., and Rhoads, C. P.: Metabolic Studies in Patients with Cancer of Gastrointestinal Tract: X. Hypoproteinemia and Anemia in Patients with Gastric Cancer, *Ann. Surg.* 118: 366-371 (Sept.) 1945.

had anemia, but this was then normocytic. It would appear reasonable to believe that had the anemia in these instances merely been on a basis of gastrointestinal bleeding the administration of iron should have been more effective.

Macrocytic anemia existed in 25 of the patients studied. The macrocytic anemia of patients with gastric cancer, like pernicious anemia, often has been attributed to an inadequate production of intrinsic factor. These two hematologic disorders differ, however, in many respects:

(a) In pernicious anemia the macrocytosis almost uniformly is associated with hyperchromia. This was not the case in patients with gastric cancer and macrocytic anemia included in the present study.

(b) Only 1 of the 25 patients with gastric cancer and macrocytic anemia had leukopenia or lymphocytosis; these leukocyte changes, on the other hand, are a frequent finding in cases of pernicious anemia in relapse.

TABLE 4.—*The Relationship of Gastrointestinal Bleeding to the Nature of the Anemia in Patients with Gastric Cancer*

	Patients with		
	Macrocytosis	Normocytosis	Microcytosis
Per cent with gastrointestinal bleeding.....	28	32	53
Per cent with no evidence of gastrointestinal bleeding.....	72	68	45

TABLE 5.—*The Erythroid Cell Counts in the Marrow of Patients with Gastric Cancer and Macrocytic Anemia*

Patient	Hemoglobin	Red Blood Cells	Mean Corpuscular Volume	Color Index	Erythroblasts per 100 Marrow W.B.C.	Normoblasts per 100 Marrow W.B.C.
D. W.	60	2.98	107	1.02	5.5	59
G. B.	75	3.75	98	1.02	1	7.5
J. O.	77	3.69	103	1.05	5	23
L. T.	60	3.00	100	1.00	9	30
M. S.	50	2.55	105	1.00	7	33
J. M.	46	2.54	97	0.92	10	24
R. B.	69	3.30	100	1.04	8	23
F. E.	73	3.42	100	1.05	8	21
M. D.	32	2.60	97	1.00	9	27
J. H.	33	2.94	98	0.90	6	18

(c) Of 10 patients with gastric carcinoma and macrocytic anemia, the marrow count failed to suggest in any instance the impaired maturation of erythroblasts characteristic of pernicious anemia in relapse (table 5).

(d) Finally, the intramuscular injection of adequate amounts of liver extract uniformly elicits a reticulocyte response in patients with pernicious anemia; in contrast, the daily parenteral administration of from 30 to 45 units of antianemic principle¹⁴ for from fifteen to eighteen days to each of 4 patients with gastric cancer and macrocytic anemia failed to induce any significant reticulocytosis (table 6). Since patients with gastric carcinoma are known to have considerable hepatic disorder, it is possible that their livers no longer may be able to synthesize, utilize or store the anti-anemic principle.¹⁵ When the livers of patients with various forms of hepatic disease are used as a source of antianemic principle in the treatment of pernicious

anemia in relapse, no significant reticulocyte rise is induced. Studies now are under way to ascertain the effects of hog gastric mucosal preparations on this blood dyscrasia.

Although both blood disorders are associated with a high incidence of gastric mucosal atrophy, gastroscopy

TABLE 6.—*The Effects of Parenterally Administered Liver Extract on Patients with Gastric Cancer and Macrocytic Anemia*

Patient	Daily Dose, Units	Days Administered	Red Blood Cells		Hemoglobin		Height of Reticulocyte Rise, per Cent
			Before	After	Before	After	
B. D.	45	15	3.05	2.90	59	64	0.2
B. E.	45	18	2.90	2.60	59	52	0.2
L. M.	45	15	2.62	2.51	50	55	0.4
H. H.	30	15	2.44	2.47	52	56	0.4

reveals that this abnormality also occurs as frequently in patients with gastric cancer who have either normocytic or microcytic anemia. Likewise achlorhydria (an almost constant feature of pernicious anemia) occurred even less frequently in the patients with gastric cancer and macrocytosis studied than it did in those with either normocytosis or microcytosis (table 7).

There is no reason to believe that the normocytic or macrocytic anemia of patients with carcinoma of the stomach is due to an increased rate of intravascular hemolysis. The total daily excretion of urobilinogen by 10 patients with gastric malignant tumors and anemia of these types was in no instance above 166.4 mg., and the average output only 79.5 mg. per day (table 8).

It has been demonstrated that macrocytic and normocytic anemias of the normochromic type frequently occur in patients with hepatic dysfunction.¹⁶ This observation has been confirmed here too in a group of 15 patients with cirrhosis of the liver and chronic alcoholism and in another of 4 persons with acute toxic hepatitis. A previous investigation of this series found considerable evidence of hepatic insufficiency also in patients with gastric carcinoma,¹⁷ and among the functions particularly depressed were those of albumin and prothrombin fabrication. Whether or not these patients, because of hepatic dysfunction, likewise have an

TABLE 7.—*The Occurrence of Gastric Mucosal Atrophy and Achlorhydria in Patients with Gastric Cancer and Anemia*

	Patients with		
	Macrocytic Anemia	Normocytic Anemia	Microcytic Anemia
Number.....	25	35	18
Per cent with mucosal atrophy of stomach.....	60	66	60
Per cent with gastric achlorhydria..	48	39	61

impaired ability to synthesize globin has not been determined. However, it was observed¹⁸ that in 4 patients with gastric cancer and normocytic anemia

16. Castle, W. B., and Minot, G. R.: Pathological Physiology and Clinical Description of the Anemias, London, Oxford University Press, 1936, p. 116.

17. Abels, J. C.; Rekers, P. E.; Binkley, G. E.; Pack, G. T., and Rhoads, C. P.: Metabolic Studies in Patients with Cancer of Gastrointestinal Tract: II. Hepatic Dysfunction, Ann. Int. Med. 16: 221-240 (Feb.) 1942.

18. Rasmussen, L. H.; Abels, J. C.; Pack, G. T., and Rhoads, C. P.: Metabolic Studies in Patients with Cancer of Gastrointestinal Tract: XIV. The Effects of High Protein Diets on the Prevention of Postoperative Hypoproteinemia in Patients with Gastric Cancer, J. A. M. A. 124: 358-360 (Feb. 5) 1944.

14. Lederle Purified Liver Extract, 15 units per cubic centimeter. This material was given to us by Lederle Laboratories, Pearl River, N. Y.

15. Wintrobe, M. M.: Relation of Disease of the Liver to Anemia: Type of Anemia, Response to Treatment and Relation of Type of Anemia to Histopathologic Changes in Liver, Spleen and Bone Marrow, Arch. Int. Med. 57: 289-306 (Feb.) 1936.

forced protein feedings produced a considerable nitrogen retention, and although plasma protein fabrication did take place the simultaneous production of hemoglobin probably was not in normal proportion. It has been shown by others² that protein administered to animals experimentally rendered hypoproteinemic and anemic

TABLE 8.—Daily Excretion of Urobilinogen by Patients with Gastric Carcinoma

Patient	Urinary Output, Mg.	Fecal Output, Mg.	Total Output, Mg.
F. W.	1.7	138.7	140.4
F. D.	2.7	34.2	36.9
B. S.	3.2	116.0	119.2
S. S.	1.3	101.6	102.9
M. M.	7.7	26.8	34.5
F. d. L.	0.8	36.7	37.5
F. M.	2.4	164.0	166.4
M. S.	0.4	52.6	53.0
A. A.	3.4	37.0	40.4
E. B.	6.1	60.5	66.6

is preferentially diverted for hemoglobin manufacture, and synthesis of hemoglobin and plasma proteins takes place in a ratio of about 3:1. In 3 of the 4 patients with gastric cancer, however, for every gram of plasma protein synthesized during this period an increase only of from 0.2 to 2.0 Gm. of hemoglobin occurred, and in the fourth instance the hemoglobin concentration actually fell during the period of plasma protein fabrication (table 9). This experiment lacks, of course, adequate human control data and is only of a preliminary nature, but at the moment it does suggest a disturbance of hemoglobin synthesis in patients with gastric cancer. If the anemia in most patients with gastric cancer (those not due to considerable, continual blood loss) is on this basis, then its treatment probably should be that of general hepatic insufficiency. A uniform therapeutic regimen thus far has not been generally accepted, but most investigators of hepatic disease¹⁹ apparently believe that a diet high in protein and carbohydrate, plus supplements of a lipotropic nature and vitamin B complex, at least are necessary. The experience of this service has been that this dietary regimen often does increase the hepatic functional capacity of the patients with gastric cancer or hepatic

TABLE 9.—The Effect of Nitrogen Retention on Plasma Protein and Hemoglobin Formation in Patients with Gastric Cancer

Patient	Average Daily Dietary Protein Nitrogen, Gm. per Kg.	Average Daily Nitrogen Retention, Gm. per Kg.	Number of Days	Total Increase of Plasma Proteins, Gm.	Total Increase of Hemoglobin, Gm.	Increase Hemoglobin to Increase Plasma Proteins
H. P.	0.43	+0.21	22	57	-24	—
G. C.	0.42	+0.23	17	40	8	0.2
E. M.	0.39	+0.21	18	18	35	2.0
P. T.	0.40	+0.22	18	36	10	0.3

cirrhosis. It is too soon to state what the effect of these measures are on the associated anemia.

Blood loss at operation probably does not add significantly to the extent of the anemic state. In most instances this is quickly compensated for, if only temporarily, by an adjustment of plasma volume, so that

the concentration of red cells or hemoglobin is only slightly altered.

Of 20 patients submitted to surgery, gastrostomy and gastroenterostomies each were performed in instances; the average amounts of blood lost in their course were 140 and 130 cc. During the more extensive operative procedures of transthoracic resection of cardia tumors, subtotal and total gastrectomies, 2, 1 and 4 patients subjected to these respectively lost at average of 462.5, 232 and 194 cc. (table 10). In most instances the concentrations of hemoglobin on the day after operation were not seriously decreased from those in the preoperative periods. Nevertheless it is entirely worth while to estimate correctly the amounts of bleeding which occur during surgical manipulation. This is particularly true in elderly patients, who, because of cardiovascular insufficiency, cannot always tolerate the administration of large whole blood transfusions given to replace an overestimated amount of blood shed.

CONCLUSIONS

1. The anemia of patients with gastric cancer varies widely with respect to the size of the red cells, but in most instances it is normochromic.

TABLE 10.—The Blood Loss During Operative Procedures in Patients with Gastric Cancer

Type of Operation	No. of Patients	Range of Blood Loss, Cc.	Average Blood Loss, Cc.	Instances in Which Hemoglobin Concentration Decreased
Gastrostomy.....	3	50-305	140	0
Gastroenterostomy.....	3	45-250	130	1
	2	450-475	462.5	1
	8	100-365	232	3
Total gastrectomy.....	4	150-270	194	2

2. There is reason to believe that the macrocytic and normocytic anemia of these patients is not on the same basis as that of Addisonian pernicious anemia but probably is related to the associated hepatic insufficiency.

York Avenue at Sixty-Eighth Street.

Health Problems on Tonga or Friendly Islands.—Very little milk is produced on the islands. There are no facilities for pasteurization. Facilities for cold storage are found only in Nukualofa, but even at that place the facilities are not nearly enough to insure adequate storage of perishable foods. Meats are inspected in some instances, but inspection is not universal and is not thorough enough to be relied on. Some fish which are normally edible are reported to become poisonous during the spawning season. In the Tonga Islands, as well as elsewhere in the Pacific, poisoning by the eating of fish in most cases is caused by fish which belong to the Tetraodontidae and which commonly are known as "puffer fish" or "balloon fish." The eggs of several species of Tetraodon are always poisonous, even when immature. The common belief that the bile and liver of this fish are poisonous is usually, but not always, true. The symptoms of Tetraodon poisoning are vertigo, headache, vomiting, diarrhea, paralysis and sudden death. Tongans suffer from a deficiency of vitamins A and D, calcium, iron and iodine. They do not like milk, eggs, fruit and green vegetables. Some fish is eaten but not a quantity large enough to supply the requirements of iodine. Foods necessary for an adequate diet could be produced in quantities sufficient to meet local needs, but habits of long standing in respect to choice of foods on the part of the natives make changes very difficult.—Simmons, James S.: *Global Epidemiology*, Philadelphia, J. P. Lippincott Company, 1944.

19. Patek, A. J., Jr., and Post, J.: Treatment of Cirrhosis of the Liver by a Nutritious Diet and Supplements Rich in Vitamin B Complex. *J. Clin. Investigation* 20: 481-505 (Sept.) 1941. Greene, C. H.: Physiologic Considerations in the Treatment of Portal Cirrhosis. *J. A. M. A.* 121: 715-720 (March 6) 1943.

Clinical Notes, Suggestions and New Instruments

TREATMENT OF VINCENT'S ANGINA WITH SULFATHIAZOLE

LIEUTENANT COMMANDER WILLIAM W. MANSON (MC), U.S.N.R.
AND

LIEUTENANT COMMANDER IRWIN T. CRAIG (MC), U.S.N.R.

That Vincent's organisms are frequently found in smears taken from a normal mouth is now common knowledge. They have been found in about 75 per cent of adult mouths examined, in spite of the absence of symptoms of Vincent's angina or Vincent's gingivitis, by Stafne. Their presence in smears taken for microscopic study should not be a basis for a diagnosis of Vincent's angina in the absence of clinical symptoms and signs, but when a patient is seen who has a sore throat, elevated temperature, a membrane on the throat or tonsil with a necrotic tonsillar ulcer and a smear showing numerous fusiform bacilli, and *Borrelia*, it can definitely be stated that the Vincent's organisms are the cause of the condition.

Arsenicals, as well as bismuth, have been shown by Ludwick,¹ Farrell and McNichols,² Jewesbury,³ Farley⁴ and others to be far from the specifics that they were once considered in the treatment of infections of this type. There have been a great number of cases reported of syphilitic patients who have developed Vincent's angina while on their antisyphilitic treatment. This would indicate that arsenic and bismuth are not even inhibitory where Vincent's organisms are concerned when they are employed by the intravenous and intramuscular route.

Fellows⁵ employed sulfathiazole orally in conjunction with a topical application of saturated solution of nearsphenamine in glycerin to the lesions and got good results in a series of 36 cases. Linton⁶ reported 4 cases treated with sulfathiazole dissolved on the tongue, and his results were so satisfactory and the time required for establishing a clinical cure so short that it was decided to adopt his recommended treatment at this activity, where man-hours are so important. By doing so, the treatment time on the average case of Vincent's angina has been cut from ten days to seventy-two hours.

This treatment consists of a 0.5 Gm. sulfathiazole tablet dissolved on the tongue every two hours during the day and two such tablets dissolved in the same manner every four hours at night. The temperature usually returned to normal in twenty-four hours and the symptoms had almost completely disappeared by that time. In spite of the clinical improvement, the treatment was continued for a total of seventy-two hours, except in very mild cases, when it was terminated at the end of forty-eight hours. A smear taken at this time either reported no Vincent's organisms or a pronounced reduction of the *Borrelia* forms. Treatment, however, was discontinued at seventy-two hours regardless of the findings on throat smear because the patient was clinically if not microscopically well. Lesions were invariably cleared up in ninety-six hours after beginning treatment.

There are many cases which could be included in this report if we reported all the cases in which the laboratory found Vincent's organisms on throat smear. However, only those cases which demonstrated a tonsillar ulceration with a grayish membrane which, on smear, showed great numbers of fusiform bacilli and spiral forms are included in this report. It is felt that only these cases represent true Vincent's angina of

the tonsil. Usually these lesions are unilateral. One case in our series showed bilateral ulceration of the tonsils. There was also 1 case which we listed as a recurrence though the possibility of a reinfection must be kept in mind in this case, since there was a period of two months' time without symptoms.

This series comprises 36 cases treated by the method described. No case was treated with sulfathiazole over seventy-two hours, the total dosage in these cases being 18 Gm. The milder cases received forty-eight hours of treatment for a total of 12 Gm. of sulfathiazole. Results were uniformly good in the two groups. Average sick days were 3.75 for this group, which is much shorter than that obtained with the older methods employed at this activity. These older methods included the use of nearsphenamine locally as well as intravenously.

There were no cases of sulfonamide sensitivity in this series. Pilots and air crewmen were grounded for forty-eight hours following the discontinuance of the drug, since this measure is employed for all patients receiving any of the sulfonamide drugs.

The results have been so satisfactory in these cases that we have adopted this method as the routine treatment of all cases which demonstrated clinical Vincent's angina. The laboratory smear is employed only to confirm the diagnosis, since the finding of the Vincent's organisms alone does not constitute a diagnosis of Vincent's angina unless the clinical signs are present.

NOTE.—Since these cases were reported, 12 additional cases have been treated by the same method as described, without recurrences, for a total of 48 cases. These cases also showed extensive ulceration of the tonsil, and though the ulcer was not completely healed at the end of the seventy-two hours treatment, the patient was asymptomatic and the ulcer was seen to be cured on follow-up examination without further therapy.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., Secretary.

NIKETHAMIDE (See New and Nonofficial Remedies, 1944, p. 330).

The following dosage form has been accepted:

WILLIAM R. WARNER & Co., INC., NEW YORK

Ampul Solution Nikethamide 25% W/V: 2 cc. and 5 cc.

SULFADIAZINE (See New and Nonofficial Remedies, 1944, p. 178).

The following dosage form has been accepted:

WILLIAM R. WARNER & Co., INC., NEW YORK

Tablets Sulfadiazine: 0.5 Gm.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1944, p. 608).

The following dosage form has been accepted:

AMERICAN PHARMACEUTICAL Co., INC., NEW YORK

Tablets Thiamine Hydrochloride: 5 mg. and 10 mg.

ASCORBIC ACID (See New and Nonofficial Remedies, 1944, p. 620).

The following additional dosage form has been accepted:

GEORGE A. BREON & Co., INC., KANSAS CITY, MO.

Tablets Ascorbic Acid: 50 mg.

PREMARIN (See THE JOURNAL, Aug. 19, 1944, p. 1098).

The following additional dosage form has been accepted:

AYERST, McKENNA & HARRISON, NEW YORK

Tablets Premarin: 0.63 mg.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writers and are not to be considered as reflecting the policies of the Navy Department.

1. Ludwick, W. E.: Evaluation of Bismuth and Arsenicals in the Treatment of Vincent's Angina, U. S. Nav. M. Bull. 42:584 (March) 1944.

2. Farrell, G. W., and McNichols, W. A.: Efficacy of Various Medicaments in Treatment of Vincent's Stomatitis, J. A. M. A. 108:630-633 (Feb. 20) 1937.

3. Jewesbury, E. C. O.: Misuse of Intravenous N. A. B. for Vincent's Infection, Brit. M. J. 2:360 (Sept. 18) 1943.

4. Footnote deleted on proof.

5. Fellows, A. T.: Treatment of Vincent's Angina, U. S. Nav. M. Bull. 41:1733 (Nov.) 1943.

6. Linton, C. S.: Treatment of Vincent's Angina of the Tonsil, J. A. M. A. 123:341 (Oct. 9) 1943.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - CHICAGO 10, ILL.

Cable Address - - - "Medic, Chicago"

Subscription price - - - - Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, FEBRUARY 3, 1945

SURVIVAL ON A RAFT AT SEA

Water is the primary need for survival on a raft at sea. A man who ingests ample water but not food can, as pointed out by Ivy and his associates,¹ survive twenty to thirty days, provided he is not subjected to physical strain, to which fasting renders him unduly susceptible. An adult may survive lack of food for forty or more days under favorable conditions. The longest recorded period of survival at sea without water is eleven days. Ivy² points out that the space and weight which can be allowed to life saving gear aboard military aircraft is naturally limited. The parachute and rubber raft are most important, and next water. This lack of space has made water packed in cans inadequate.

With the opening of the Naval Medical Research Institute in October 1942, further investigations were undertaken. The suggestion that sea water could be ingested at a rate that did not cause emesis and diarrhea—an average of 800 cc. per day—or that it could be taken as a retention enema was physiologically unsound. In practice this method was found to increase the rate of dehydration of the body and disturb the electrolyte balance. The dechlorination method devised by Goetz converted the sea water to a 3.9 per cent solution of sodium citrate. The sodium citrate is converted in the body into sodium bicarbonate. The Goetz method maintained the body water better than is possible without ingestion of water, but the alkali reserve of the blood was raised to 71 to 77 volumes per cent and the urine became too alkaline. The continued ingestion of this water would prove to be injurious. Next an attempt was made to determine whether fresh water could be extended by the addition to it of some sea water. Ivy and his associates found that not more than 1 volume of sea water should be added to 4 or 5 parts of fresh water, the maximum limit being set at 200 cc. of sea

water or 6 Gm. of salt daily. Ivy showed that minimal daily water requirements under ordinary working conditions in a laboratory with enough carbohydrates to prevent ketosis (50 to 75 Gm.) ranged from 825 to 1,000 cc. in adults weighing from 55 to 75 Kg. Desalination of sea water next occupied the attention of the staff of the Navy Institute. The "Permutit" method, which was developed, involved the use of a single precipitation and the use of only one bag, into one end of which a filter was placed. This method yielded 4.5 volumes of potable water to 1 volume of chemical and equipment. A can of chemical and equipment having a volume of 700 cc. will yield 3,000 cc. of potable water. This amount of water will extend survival at least six times longer than the fresh water which is supplied in a can occupying approximately the same space. In an actual trial in which 21 men spent four days on rubber rafts at sea, this method met the requirements better than any other. The method was adopted by the various military and civilian aviation services.

In a previous communication Ivy pointed out that, although water was more important for survival than food, even a limited supply of food,¹ if properly selected, raises morale, provides appreciable energy and contributes to the conservation of the water supply. Ivy and his associates have developed a "tablet emergency ration" the three food components of which are sucrose-citric acid, sucrose-lipid-citric acid and sucrose malted milk tablets.³

THIOUREA AND EXPERIMENTAL CARCINOGENESIS IN THE THYROID

The production of carcinoma of the thyroid in rats¹ is of extraordinary interest to all students of carcinogenesis and of thyroid disease. Wilson, De Eds and Cox² at Stanford University discovered that 2-acetylaminofluorene fed to rats produced neoplasm of many organs and tissues. Bielschowsky,³ working in Great Britain, confirmed their observations that the implanted substance did not cause local inflammation or new growths, while feeding caused cancers of the external auditory canal, the lungs, salivary glands, liver, pancreas, bladder and breast as well as leukemias and sarcomas. All this occurred in a species with a low spontaneous occurrence of tumors and from an agent that does not cause cirrhosis or other degenerative changes. Obviously a carcinogen of extraordinary potency has been discovered by the American pathologists.

3. A Tablet Emergency Ration for Lifeboats and Rafts, editorial, J. A. M. A. 125: 494 (June 17) 1944.

1. Bielschowsky, F.: Tumors of the Thyroid Produced by 2-Acetylaminofluorene and Allylthiourea, Brit. J. Exper. Path. 25: 90 (June) 1944.

2. Wilson, R. H.; De Eds, F., and Cox, A. J.: Toxicity and Carcinogenic Activity of 2-Acetylaminofluorene, Cancer Research 1: 595 (Aug.) 1941.

3. Bielschowsky, F.: Distant Tumors Produced by 2-Aminofluorene and 2-Acetylaminofluorene, British J. Exper. Path. 25: 1 (Feb.) 1944.

1. Ivy, A. C.; Fitcher, Palmer H.; Consolazio, W. V.; Pace, Nello, and Gerrard, Elizabeth J.: A Tablet Emergency Ration for Lifeboats and Rafts, U. S. Nav. M. Bull. 42: 841 (April) 1944.
2. Ivy, A. C.: Contributions to Survival on a Raft at Sea, Proc. Inst. Med. Chicago 15: 173 (Dec. 15) 1944.

None of the cancerous animals in either series had tumors of the thyroid gland. Nor did cancers occur in rats fed thiourea by Bielschowsky.¹ Rats fed both thiourea and 2-acetaminofluorene did show adenomatous or anaplastic invasive epithelial tumors. Thiourea alone produced, as it does in man and other animals, an intensely hyperplastic thyroid gland. Thus a chemical that causes hyperplasia limited to a single organ prepared that organ for carcinogenesis by a chemical which normally is effective only on other tissues. As thiouracil is being given to men, and as acetaminofluorene was under consideration as an insecticide, these results have not only theoretical but practical significance.

Occupational cancers of man led the Japanese to the discovery of experimental chemical carcinogenesis. The frequency of histologic neoplasms in hyperplastic cirrhotic livers, in hyperplastic prostates and in nodular goiters is recognized by most pathologists. The importance of hormonal chemical agents in carcinogenesis, stressed first by Leo Loeb, has been widely confirmed in human experience and animal experiment. Human cancers, and those of most mammals, have not been found to be transmitted by infection or by filtrable agents. The truly startling effects of acetaminofluorene on various tissues of the rat, and the necessity for hyperplasia as a concurrent factor in thyroid carcinogenesis, reemphasize the importance of chemical carcinogens and of hyperplasia in predisposition to cancer in man.

If viruses assume any role in the thyroid cancers evoked by these two chemicals, it must be a role different from that of the filtrable agents from leukemic or tumor cells of birds or rabbits, since these regularly reproduce specific cellular reactions if injected into other members of the same species. It is just as improbable that chemical carcinogens act by the activation of local latent viruses as that chloroform or phosphorus damages the liver, or mercury the renal tubules, by the activation of latent viruses in these tissues. Herpes virus is apparently latent in nearly all human beings and is activated by many factors, some of them trivial disturbances of bodily functions. In toxoplasma encephalitis of the newborn and in congenital syphilis, latent infectious agents manifest themselves in the rapidly growing fetal tissues. The possibility cannot be excluded that some types of hepatitis, encephalitis, nephritis and even of cancer may be due to activation of latent viruses. But when a carcinogen evokes cancers in nearly all the tissues of nearly all the members of a species in which spontaneous tumors of most tissues are extremely rare, it must be conceded that viruses do not assume a role in the phenomena or that the latent cancer viruses are as all pervasive and therefore of as little specific significance as salt and water.

The thyroid carcinogenesis reported by Bielschowsky raises a practical question as to the possible hazard of using thiouracil in toxic diffuse goiter except as prelimi-

nary to resection of the gland. In old and even in middle aged patients some adenomas are usually found. Microscopic studies are said to reveal carcinomas in 3 to 8 per cent of grossly adenomatous goiters, and even in hyperplastic thyroids removed for toxic diffuse goiter occasional cancers have been found arising in minute adenomas.² Since thiourea and acetaminofluorene together evoke rapidly growing tumors, which neither alone produces, may not thiouracil, together with the dyscrasia which causes adenomas and "carcinoma in situ" in so many thyroids, lead to clinical cancer when prolonged action is maintained in older patients? This is a problem which all thyroid clinics using thiouracil will undoubtedly keep under the closest surveillance.

BIOLOGIC VALUE OF SOY PROTEIN

This country, with its vast food producing capacity and food stores, has developed average food habits at a level not even approached elsewhere. In the United States the soybean has not been the staple, main source of nutriment that it is to large portions of the world's inhabitants. Soybean flour has been increasingly included in breads and pastries; the small increase in protein, the "richer" color and the nutty flavor imparted by modest admixture of this material are some of the reasons for the growing diversion of soybeans to the production of low fat soyflour. The possibility, emphasized by the war, that the large quantities of soybeans raised in the United States might provide human food which could be substituted for more expensive or less readily available nutrients ordinarily consumed has received attention in the present national emergency.

Of particular interest in this connection is the suitability of the protein of soybeans for human consumption. The dry seeds contain about 34 per cent of protein; as some 216,000,000 bushels was produced in 1944, this legume represents a tremendous reserve of food protein, provided it is physiologically available in the body. Although the long history of the use of soybeans as human food would seem to argue a priori against any considerable detrimental effect, convincing evidence of its value in this respect has been lacking. In a recent experimental study³ comparison of the net retention of nitrogen by adult human subjects when soybeans provided the protein with the same values when whole egg was the main protein of the experimental diet was measured. The assumption was made that the protein of the whole egg is completely digested, absorbed and utilized, in which case the fecal and urinary nitrogen when egg was consumed would represent the evidence of irreducible protein metabolism.

4. Goetsch, Emil: A New Concept Regarding the Origin of So-Called Primary Carcinoma of the Hyperplastic Thyroid, *Ann. Surg.* **118**: 843 (Nov.) 1943.

1. Cahill, W. M.; Schroeder, L. J., and Smith, A. H.: *J. Nutrition* **28**: 209 (Sept.) 1944.

Soybean protein in three forms was studied: as whole cooked, field grown beans, as commercial low fat soy-flour and as a prepared soybean milk. The true digestibility of the protein in the three products was 90.5, 94.0 and 89.6 per cent respectively when compared to whole egg protein. These values are somewhat lower than those for food proteins of animal origin but superior to those usually observed with other legume protein. With respect to the biologic value of soybean protein, the values were 94.5, 91.7 and 95.3 per cent respectively, indicating that, tested under the conditions cited, soybeans in the forms employed can be considered an excellent source of protein in adult human nutrition.

In view of the current enormous production of soybeans, our national nutrition, as far as protein is concerned, is amply safeguarded against an extensive emergency. Likewise, in the occasional instances in which usual food protein is not well tolerated, the soybean offers additional possibility of dietotherapeutic adjustment with respect to protein nutrition.

Current Comment

GRAMICIDIN S

The latest result of the search for antibacterial substances in fungi and other microbes appears to be the isolation by Russian investigators¹ of a crystalline bactericidal polypeptide from the liquid culture of an aerobic sporulating soil bacillus of the *Bacillus brevis* type described by Stokes and Woodward.² This strain was one of several hundred strains of sporulating bacilli from Russian soil studied with respect to antibacterial action but with otherwise negative results. The alcoholic extract of the acid precipitate of liquid cultures of the bacillus yields the active principle in easily obtained thin, colorless crystalline needles, alcoholic solution of which diluted with water has bacteriostatic and bactericidal effects on staphylococci, streptococci, pneumococci and some other gram positive bacteria as well as on a number of gram negative bacteria, including *Proteus vulgaris* and *Escherichia coli*. This antibacterial substance has been named Soviet gramicidin or gramicidin S. Chemically it differs from the gramicidin of Dubos and from tyrocidine hydrochloride;³ it is a stable substance; its activity is not destroyed by autoclaving. Experimentally it was found to protect guinea pigs and rats against infection with the gas bacillus. Sergiev⁴ reports on its clinical use by local application in 1,500 cases in ten Soviet hospitals. Solutions in water or in 70 per cent alcohol, containing in each cubic centimeter 400 mg. of gramicidin, were used; also ointment of a

4 per cent alcoholic solution of the dry substance diluted fifty times with castor oil. Favorable results were obtained in suppurations of soft tissues and in skin grafting, osteomyelitis, empyema, peritonitis and skin infections. In the latter the best results followed the application of dilute alcoholic solutions. Conclusions are not drawn with regard to the prophylactic value of gramicidin S, but all wounds treated prophylactically with it "healed by first intention." Toxic effects did not result from the external use or the introduction into the pleural or peritoneal cavities of the watery solution of gramicidin S. Alleviation of pain is mentioned as a characteristic feature of its use. The outcome of further observations on the value of gramicidin S will be of great interest.

EPILEPSY—ACCURATE INFORMATION FOR THE PUBLIC

The Public Affairs Committee, with the aid of a number of leaders in the field of epilepsy, has made available a useful, realistic consideration of the disease for the lay reader.¹ After description of a typical case the report discusses what epilepsy is and how it got its bad name. The pamphlet suggests consideration to changing the name of the disease because of its bad connotation but rejects the suggestion. Causes and diagnostic methods are next discussed, including a simple, clear explanation of the electroencephalograph. Modern methods of treatment are outlined. The expensiveness of quackery is emphasized. Useful books for epileptic patients are listed. Sensible advice about sending children with seizures to school and about marriage and parenthood are given. An encouraging survey of industrial opportunities for the epileptic is outlined. All in all, this is a fine, brief and inexpensive pamphlet which should be of great use to patients. Physicians dealing with the epileptic and their families might find it decidedly advantageous to give a copy of this pamphlet as a planned part of the therapeutic regimen.

TARTARIC ACID

A recent note¹ on foreign trade lists the items of largest importation from Italy since the present war began. Among such items as essential oils, red squill, onion seeds and wine is 112 tons of argol. This substance is crude potassium acid tartrate; it crystallizes as a thick crust on the walls of wine vats and to date has been the main source of tartaric acid. In view of the wide use of this organic acid in the food industry and in medicine, it is of more than passing interest that such an important substance should depend on a source which is so readily curtailed by war in restricted localities. As happened in connection with citric acid after the last war, efforts are now being made to adapt new biochemical principles to the synthesis of organic acids which will be satisfactory substitutes for tartaric acid in the various ways in which it has entered into the technology of food and pharmaceuticals.

1. Gause, C. F., and Brazhnikova, M. G.: Gramicidin S: Origin and Mode of Action, *Lancet* 2: 715 (Dec. 2) 1944.

2. Stokes, J. L., and Woodward, C. R.: The Isolation from Soil of Spore Forming Bacteria Which Produce Bactericidal Substances, *J. Bact.* 43: 253 (Feb.) 1942.

3. Belozensky, A. N., and Passhina, T. S.: Chemistry of Gramicidin S, *Lancet* 2: 716 (Dec. 2) 1944.

4. Sergiev, P. G.: Clinical Use of Gramicidin S, *Lancet* 2: 717 (Dec. 2) 1944.

1. Yahraes, Herbert: *Epilepsy—The Ghost Is Out of the Closet*. New York, Public Affairs Committee, Inc., 1944, 10 cents.
1. *Time* 44: 80 (Nov. 13) 1944.

MEDICINE AND THE WAR

ARMY

SKIN DIPHThERIA IN SOLDIERS

Major Gen. Norman T. Kirk, Surgeon General of the Army, recently reported that minor epidemics of skin diphtheria which have broken out among American soldiers in the Pacific areas have been brought under early control. While these epidemics have not been of serious consequence, the problem of skin diphtheria is one of serious potential significance.

Lieut. Col. F. R. Dieuaide, chief of the tropical disease treatment branch of the Surgeon General's Office, who recently returned from a three months visit in three Pacific theaters, described a small epidemic of skin diphtheria in the New Hebrides. It is thought that the epidemic arose from carriers. From this source in the skin of 1 person organisms are readily transferred to skin lesions in other persons or to the throats of susceptible soldiers. Colonel Dieuaide said that this disease has been found in this war in North Africa, in India and in the Pacific. In general it is so rare that it is unknown to the public at large, including many doctors. Inability to take proper hygienic care of the skin and superficial wounds and living in close quarters give rise to its spread. The great importance of skin diphtheria, Colonel Dieuaide said, lies in the danger that it may cause epidemics of ordinary diphtheria in susceptible soldiers who would suffer the usual severe illness. A small number of such cases and a few deaths have occurred.

MILITARY TRAINING FOR WACS

The War Department announced recently that all military training for the Women's Army Corps will be consolidated at the First WAC Training Center, at Fort Des Moines, Iowa, by April 1. The Third WAC Training Center, at Fort Oglethorpe, Georgia, will be discontinued by that date. Only WAC training activities at Fort Oglethorpe are affected by this consolidation.

Consolidation of military training facilities is in line with the Army's WAC recruiting program for 1945, which will stress the enlistment of women possessing specialized skills rather than large numbers, together with those qualified for training and service as medical and surgical technicians in army hospitals. The efficient and economical utilization of training personnel and facilities will require only the one WAC training center at Fort Des Moines for basic and specialized military training in light of reduced enlistment quotas in 1945. Medical and surgical technicians will receive specialized training in army medical department schools and hospitals after completion of basic military training.

ARMY AWARDS AND COMMENDATIONS

Captain Alan R. Bleich

The Soldier's Medal was recently awarded to Capt. Alan R. Bleich, formerly of Brooklyn, for saving the life of a pilot caught beneath a burning plane. Disregarding his own safety and the imminent danger of the burning plane exploding, Captain Bleich crawled beneath the plane as it was hoisted to cut loose Capt. Jake L. Wilk, Houston, Texas, pilot. Captain Bleich was medical officer of the day (September 28) and was seated in his jeep while the P-38s were taking off on a bombing mission against targets in Germany. As Captain Wilk took off, it was evident that he was experiencing engine trouble and was going to have to make a forced landing. Captain Bleich immediately started for the end of the runway and found that Captain Wilk's plane had overturned and he was pinned under the canopy. Grabbing a shovel, Captain Bleich dug the dirt away from the canopy so that the pilot could get some air. At the same time he directed the crash crew to pass a chain under the nose of the plane so that it could be lifted and the pilot

taken out. Another fire then broke out around the left engine. Without hesitation, Captain Bleich got under the plane and cut the pilot loose from his safety straps. While under the plane there was imminent danger of the chain slipping, crushing both of them. Dr. Bleich is a licentiate of the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow, 1940. He entered the service Oct. 29, 1942.

Major Sidney Schnur

Major Sidney Schnur, formerly of Houston, Texas, has been awarded the Bronze Star Medal. According to the citation, "Major Schnur showed great initiative, ingenuity and ability in maintaining the health of the command. By successfully raising the sanitation level of the Air Force field installations to an unusual degree, by initiating and following through a malaria control program which has actually controlled the disease, by persistent efforts and novel procedures in the control of venereal diseases, by improving the quality of food served in field messes through introduction of new methods of procurement and distribution, by devising and supplying escape first aid kits to combat personnel and by his continuous research in various fields of aviation medicine Major Schnur lowered the noneffective rate from disease to a bare minimum. Major Schnur's devotion to duty and his successful and tireless efforts in the fields of health, hygiene and sanitation reflects great credit on the armed forces of the United States." Dr. Schnur graduated from New York University College of Medicine, New York, in 1935 and entered the service in October 1940.

Colonel Albert R. Dreisbach

The Legion of Merit was recently awarded to Col. Albert R. Dreisbach, formerly of Washington, D. C., for "services from February 1942 to October 1944 as assistant director and director of the division of health and sanitation in the Office of the Coordinator of Inter-American Affairs. He contributed greatly to the joint war effort of the American republics through his effective direction of the cooperative health and sanitary program, designed to support military operations, production of strategic materials and morale in the tropical areas of the American republics. His initiative, imagination and loyalty contributed to the application of health measures in eighteen of the Central and South American republics, safeguarding the interests of both the United States and these countries." Dr. Dreisbach graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1931 and entered the service June 17, 1931.

Colonel William H. Huntington

Commander, Order of the Crown of Italy, has been conferred on Col. William H. Huntington, formerly of Portland, Ore., and now commanding officer of a station hospital with the Peninsular Base Section, the first American supply base established on the European mainland. There was still fighting in Naples when the section arrived, and it was also confronted with a serious epidemic of typhus. Quantities of DDT powder were rushed in, delousing stations set up throughout the populated districts, and by virtue of fast and vigorous work, what might have been a disastrous epidemic was averted. Dr. Huntington graduated from George Washington University School of Medicine, Washington, D. C., in 1910 and entered the service Aug. 22, 1941.

Captain Henry Clay Robertson Jr.

Capt. Henry Clay Robertson Jr., formerly of Charleston, S. C., was recently awarded the Bronze Star Medal. The award was made for "meritorious achievements in connection with extensive military operations" against the enemy. Dr. Robertson graduated from the Medical College of the State of South Carolina, Charleston, in 1935 and entered the service July 23, 1942.

MISCELLANEOUS

AMERICAN COLLEGE OF SURGEONS
DEFERS WAR SESSIONS

The American College of Surgeons has deferred for the time being its 1945 series of War Sessions, four of which were to have been held in February, according to an announcement by Dr. Irvin Abell, chairman of the Board of Regents. Dr. Abell states that plans had been completed for the February meetings because earlier indications were that sessions of a strictly educational nature, limited to relatively small local areas, would be sanctioned by the War Committee on Conventions, but it now develops that the transportation crisis is so acute that even this type of meeting should be omitted in order to help the war effort, and the College is glad to cooperate with the agencies responsible for the movement of military personnel and supplies.

The American College of Surgeons has voluntarily omitted its annual clinical congress ever since the United States entered the war, in order to aid the war effort by minimizing the demands on transportation facilities. The War Sessions were devised as a wartime expedient to preserve the educational values as far as possible, with greatly lessened demands on hotel and travel services.

The February meetings were to have been held in St. Louis on the 2d, in Louisville on the 5th, in Milwaukee on the 7th and in Cleveland on the 27th.

SURPLUS FIRST AID DRESSINGS

The Office of Surplus Property of the Treasury Procurement Division has announced that it is imposing no restrictions on the use of the 28 million Carlisle first aid dressings recently placed on sale by its medical and surgical division. This action is based on the following letter, which the Treasury received from the Food and Drug Administration:

We have reviewed the labeling and have observed the dressings of the "small first aid dressing U. S. Army Carlisle Model sterilized" and the labeling of the "large size first aid dressing U. S. Army Carlisle Model sterilized" which you submitted to us today.

So far as the requirements of the Federal Food, Drug and Cosmetic Act are concerned, assuming that the lot of merchandise involved does in fact consist of sterile first aid dressing, there is no objection to the sale of this material for use by the medical profession or by the lay public. We might add, however, that we doubt whether there will be any considerable demand for dressings of this size by the lay public.

While the Treasury Department cannot warrant that each of the dressings is sterile, the announcement by the Office of Surplus Property was promoted by the fact that advertisements of this merchandise had previously stated that the dressings were not to be used for medical purposes.

The Treasury Department has extended until 2 p. m. Central War Time, February 17, the time during which bids will be received on this merchandise at the Procurement Division Regional Office, Cincinnati, and persons who have already bid may, if they so desire, revise their bids in light of the new ruling.

AMERICAN COMMITTEE FOR MEDICAL
AID TO ITALY

In reference to the notice in THE JOURNAL of Dec. 23, 1944, page 1097, concerning the organization of Medical Aid for Italy, the president of the committee, Dr. Arturo Castiglioni, professor at Yale University, wishes to express his thanks to the many doctors who sent him instruments, medicine and other gifts. The need in Italy is extreme and the mortality of children has assumed the rate of 47 per cent. The rate of tuberculosis has tripled in recent months. There is also an urgent request from Italian doctors for American medical reviews and medical books, which have not been brought into the country since 1939. All gifts will be conveyed to Italy through the American Relief for Italy, Incorporated, or will be used for the purchase of medicine and instruments. All donations will be most gratefully accepted and should be addressed to the American Committee for Medical Aid to Italy, 225 Lafayette Street, New York 12, N. Y.

WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

Gardiner General Hospital, Chicago: Diseases of the Intestinal Tract: Medical and Surgical Diagnosis and Care, Dr. Warren H. Cole and Walter L. Palmer, February 14; Pleural and Peripheral Nerve Injuries, Dr. Adrien H. Verbrughe, February 28.

Station Hospital, Fort Sheridan, Ill.: Dermatologic Diseases, Drs. James H. Mitchell and Francis E. Senebar, February 13; Burns and Plastic Surgery, Drs. Wayne B. Slaughter and Volney B. Hyslop, February 28.

Mayo General Hospital, Galesburg, Ill.: Malignancies in the Army Age Group: Medical X-Ray and Surgical Diagnosis and Treatment, Drs. Danely P. Slaughter and George J. Rukstien, February 14; Endocrinology, Dr. Willard O. Thompson, February 28.

Station Hospital, Camp Ellis, Lewistown, Ill.: Wound Healing and Tendon Surgery, Drs. Hilger P. Jenkins and Alfred Rasmussen, February 14; Mental Hygiene and the Prevention of Neuroses in War, Capt. Charles O. Sturdevant, February 28.

Regional Hospital, Chanute Field, Rantoul, Ill.: Blood Disorders, Malaria; Filariasis, Drs. Raphael Isaacs and Harry Jacobs, February 14; Diseases of the Kidneys: Urological Tract, Drs. Laurence E. Hines and Norris J. Heckel, February 28.

Station Hospital, Harding Field, Baton Rouge, La.: Psychosomatic Medicine, Dr. Theodore Watters, February 8; Vascular Diseases, Dr. Howard Mahorner, February 8; Fractures of the Ankle, Lieut. Col. Samuel Terhune, February 8; Amputations, Dr. Rawley Penick, February 8.

HOSPITALS NEEDING INTERNS
AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, January 27, page 220)

GEORGIA

Grady Memorial Hospital, Atlanta. Capacity, 720; admissions, 141. Mr. Frank Wilson, Superintendent (residents—medicine, obstetrics, gynecology).

ILLINOIS

Holy Cross Hospital, Chicago. Capacity, 161; admissions, 4,199. Sister M. Dorothea, R.N., Superintendent (3 interns, July 1).
Illinois Masonic Hospital, Chicago. Capacity, 186; admissions, 1,172. Mr. William H. Tenney, Superintendent (2 interns, July 1).

MASSACHUSETTS

St. John's Hospital, Lowell. Capacity, 200; admissions, 4,407. Sister Angelica, R.N., Administrator (3 interns, July 1).
Belmont Hospital, Worcester. Capacity, 250; admissions, 1,061. Dr. Huston K. Spandler, Superintendent (resident—communicable diseases, July 1).

MICHIGAN

Grace Hospital, Detroit. Capacity, 549; admissions, 17,792. Dr. J. H. Law, Director (residents—surgery, urology).
St. Mary's Hospital, Grand Rapids. Capacity, 315; admissions, 7,570. Sister Mary Grace, Superintendent (2 interns).

MISSOURI

Menorah Hospital, Kansas City. Capacity, 145; admissions, 2,707. Dr. E. Kirsch, Administrator (interns).
Jewish Hospital, St. Louis. Capacity, 303; admissions, 6,704. Mr. Florence King, Administrator (residents—surgery, obstetrics-gynecology).

NEW YORK

St. John's Hospital, Brooklyn. Capacity, 250; admissions, 3,699. Mr. E. Reid Caddy, Director (interns, July; April 1946).
St. John's Riverside Hospital, Yonkers. Capacity, 220; admissions, 4,429. Mr. S. Chester Fazio, Superintendent (2 interns).

PENNSYLVANIA

St. John's General Hospital, Pittsburgh. Capacity, 250; admissions, 5,125. Sister M. Baptista, Superintendent (3 interns, July 1).

WASHINGTON

St. Luke's Hospital, Spokane. Capacity, 335; admissions, 5,000. Mr. Gordon W. Gilbert, Administrator (2 interns, July 1).

ORGANIZATION SECTION

ANNUAL CONFERENCE OF SECRETARIES AND EDITORS OF CONSTITUENT STATE MEDICAL ASSO- CIATIONS

SATURDAY MORNING SESSION, NOVEMBER 18

DR. D. L. CANNON, Montgomery, Ala., Presiding

(Concluded from page 230)

Radio Broadcasting by the Medical Profession

DR. A. S. BRUNK, Detroit: When I speak of "radio advertising by the medical profession" I mean advertising in its commercial sense—by the purchase of time over the air to bring a message about medicine and a "plug" for the medical profession and its philosophy. The Michigan story begins with the levy of a special \$10 per capita assessment by the Michigan State Medical Society House of Delegates at its September 1943 session. The assessment was effective for the calendar year 1944. This assessment was earmarked for public education. The activity included a "School of Information" for county society officers and key men, the purchase of thousands of pamphlets, a contribution to the Michigan Health Council (which is an agency that informs the public through a general educational program what the medical society and the hospital association and the Michigan Hospital and Michigan Medical Service are doing to meet the health needs of all the people in our state). But the greatest activity from the assessment was the program of radio advertising sponsored by the state medical society at a cost of \$10,000.70. A special Committee on Radio, composed of three members, was appointed.

The chairman, who practices medicine in Detroit, had for years obtained gratifying results from the radio advertising of a flourishing commercial business which he had inherited. He had the experience and the practical touch. He recommended the placing of the program in the hands of an advertising agency equipped and interested in doing the job. Such an agency, which had served the dental profession of the state in its fight against advertisers, was enlisted. Soon twelve Michigan stations were lined up for two five minute broadcasts each per week for thirteen weeks. The radio stations were chosen geographically so that every section of the state was covered.

The twenty-six five minute presentations were dramatized sequences of an educational nature. The theme of the skits depicted the benefits to the public of the present and proposed medical availabilities as contrasted with the federal bureaucratic compulsory forms of medical practice. Subject matter of some of the skits included anesthetics, appendicitis, blood plasma, bubonic plague, cataracts, insulin, diphtheria, bone fracture, malaria, penicillin, rabies, rickets, spinal meningitis, plastic surgery, typhoid and subdural hematoma. The advertising agency developed, produced and transcribed the dramatized episodes under the supervision of the Michigan State Medical Society's Special Committee on Radio. Most of the ideas depicting medical incidents in the daily lives of the people originated in the minds of the members of the committee or of other medical men interested in the program. Professional radio actors of high histrionic ability were used. Each transcription had the following introduction: "Presenting a dramatized epic in the history of American Medicine and its application by American Physicians." The sequence was followed by the following plug: "American Medicine, the private practice of which represents the cumulative knowledge of decades, the heritage of centuries, the sacrifices and discoveries of countless individuals, has made the United States the healthiest country in the world. Spinal meningitis, diphtheria, smallpox, typhoid fever and other fatal diseases, scourges of yesteryear, are today either preventable or curable,

a credit to the tireless efforts of the American medical profession. Thirty-seven states now have voluntary prepayment medical or hospital plans developed by the medical profession and the hospitals. No theoretical plan, government controlled and operated, and paid for by you, should replace the tried and proved system of private practice now in use."

The program began over the twelve Michigan stations on August 1 and ended over Detroit's WXYZ on November 15. The results will be of interest to you. Toward the end of the series a spot or chain break (of about twenty-four words) was made after each presentation over all the twelve stations. This announcement offered something free to all listeners in order to ascertain listener interest. That which was offered was a copy of a recent booklet published by the Michigan Health Council containing the highlights of the Michigan Survey of Public Opinion concerning Medicine, which poll had been made by the Health Council at a cost of \$9,500. To date but a small number of requests have been received for these booklets, which is understandable, as there have been only two announcements over outstate stations and one from Detroit. However, our agency advises us that recent surveys of the various stations over which our program is broadcast show a combined potential listening audience of 1,250,000 people, or approximately 20 per cent of Michigan's population.

We feel that Michigan's experiment in radio advertising of the medical profession has been fruitful. Some of the people now know there are two sides to the question of distribution of medical care and, further, that the solution does not lie in the visionary panaceas offered by self seekers or dreamers who know little or nothing about medical practice and its intricate ramifications but in a thoughtful, painstaking evolution being worked out by the medical profession of the United States. Many now realize that private practice, aided by supplementary features (such as Michigan Medical Service with its 700,000 subscribers), are to be preferred—for their own good—than compulsion and further taxes out of Washington. I myself feel that the experiment has proved its worth and the Michigan State Medical Society will continue its radio advertising in the coming year.

Radio is a powerful vehicle, recognized by business, industry and even by politicians. Its value must not be overlooked or underestimated by the medical profession. Its use on a commercial basis—call it "propaganda" if you will—must be grasped by medical organizations now. The ear of the people must be reached today, not after the politicians have sold them a bill of cheap goods—via the radio!

If requested, assistance will be freely given to other state medical societies who may be interested in developing a similar program of radio advertising.

DISCUSSION

DR. OLIN WEST, Chicago: The American Medical Association itself has long maintained a nationwide broadcasting program and within the last several months has provided transcriptions for the use of medical societies and some for the use of some other groups. Those transcriptions are being rather freely used. Some of the medical societies seem to think that they have been extremely helpful. As far as I know, none of the other state programs have put on a paid broadcast. It is a question that seems to me to be of great interest, as to whether it is not a duty of the radio and the press to help in the dissemination of helpful, authoritative information about health matters. I do not know whether the time will ever come when the organized medical profession over the nation will wish to engage in a program similar to this, but I do agree with Dr. Brunk that the radio is a powerful instrument and that, properly used by the medical profession, it can have a tremendous effect in promoting the interest of medicine and thereby promoting the interest of the public.

DR. W. F. DONALDSON, Pittsburgh: I wish to express my personal gratitude to the Michigan Medical Association for its enterprise and enthusiasm and for the extent to which its

entire membership has contributed to this effort. Pennsylvania has for a number of years carried on as far as possible, not in the name of the state medical society but of many component medical societies, these instructional health programs. I appreciate just exactly how difficult it is to keep up the interest of state medical societies in providing the programs for the numerous broadcasting stations that are scattered throughout a state like Pennsylvania. Recently the American Medical Association has come to our rescue and we are using these transcriptions, or platters. It is astonishing the way these small broadcasting stations in towns of anywhere from 20,000 to 50,000 people like to receive these platters. We have a constant demand for them. I only hope that other state medical associations are using them as enthusiastically as we are in Pennsylvania. I want to express again my personal interest in this movement in Michigan. I do not know how soon I might be able to persuade Pennsylvania doctors to subscribe to the extent of \$10 apiece for such an experiment, but I am sure that it has great possibilities, and what we need above all things is persistence.

DR. W. T. BROCKMAN, Greenville, S. C.: I believe that, as somebody said, medicine is gradually being maneuvered into something that is entirely different from our tradition. I think that in South Carolina we are hungry for some kind of a change. We realize that we must make a change. Recently our live secretary has formulated and brought before our council a ten point program to acquaint the public better with what we are trying to do. In a modest way we started out with a few radio programs. I certainly am pleased to hear the Michigan doctor tell us about how well they have done this. It is going to stimulate me as president-elect of my society to push this movement. I think we have leaned backward in our modesty for a long time and that, regardless of how much we dislike to become bold and get out in front, we are going to have to do it in a dignified, modern way, as has been suggested here by our Michigan friends.

MR. T. A. HENDRICKS, Indianapolis: May I ask one question? What is the reaction to sponsored programs, that is, to programs sponsored by a commercial company? For a number of months we in Indiana have put on programs on a sustaining basis, that is, we do not get a good hour on the radio. We do not pay anything for our time. We have a company that sponsors our program. We produce it, we write the script. It is merely sponsored by a commercial company. We can get a good hour on the radio. What is the reaction to such an arrangement?

DR. STANLEY B. WELD, Hartford, Conn.: You have heard Dr. West and Dr. Donaldson refer to radio programs not paid for, and I am sure that is the universal or pretty nearly the universal custom throughout the state. I wanted to ask Dr. Brunk just why the Michigan State Society felt it necessary to have a paid program.

DR. A. S. BRUNK, Detroit: First, I want to thank those who have discussed the paper and shown an interest. I like the expression that the doctor from South Carolina used when he said that medicine is being maneuvered into a change. That is true and, as I see it, it is time that the medical profession gets immediately on the job and does something to try to guide that change. I am afraid that if it is not done promptly it may be too late. Concerning the question asked by Mr. Hendricks of Indiana as to what the difference is between a paid radio program and one sponsored by some commercial organization, I do not think there is any difference. Your commercial organization pays for the time as I understand it and it just saves the medical profession that much expense. They do get better hours because they are being paid for. We, of course, have the scientific programs which are donated by the radio station in Michigan and we don't get good times. The other question that was asked was why we thought it necessary to pay for radio broadcasting. Well, it is for the same reason that I have just stated, that is, you get better time and you can control the entire program. You can put on what you will. You cannot put on a commercial program over the radio without paying for it. This is a commercial program and not a scientific program. The radio stations will not donate time for commercial programs.

Washington Letter

(From a Special Correspondent)

Jan. 29, 1945.

General Hawley Appeals for Nurse Enlistments

A personal appeal to every nurse in the United States who is not in uniform was made by Major Gen. Paul R. Hawley, chief surgeon, European theater of operations, in a broadcast from Washington, to encourage enlistment in the Army Nurse Corps. Nurses in the European theater, he said, are "getting tired. . . . They are working rarely less than twelve hours a day and frequently as long as sixteen. They are making a record that is the most glorious page in the history of nursing. They are not complaining, but they cannot stand this strain indefinitely." General Hawley said that his appeal was "in behalf of thousands of wounded American boys—and, I am afraid, thousands more who will be wounded after this war is ended. These are the ones who suffer from the critical shortage of nurses. And this shortage is getting greater each day."

Improvement of Child Adoption Laws Urged

Review and improvement of laws relating to child adoption is urged by Katharine F. Leuroot, chief of the Children's Bureau, United States Department of Labor, in regard to the bureau's recommendations as to essentials of adoption laws and procedures. Not more than a fourth of the states have adoption laws that approximate the standards believed necessary by the bureau for adequate protection, she said. The following principles were recommended in adoptions to safeguard interests of all three parties concerned, the child, the natural parents and the adopting parents: 1. Adoption proceedings should be before a court dealing in children's cases. 2. The court should have the benefit of state welfare department study and recommendations in every proposed adoption. 3. Consent should be obtained from the natural parent. 4. Court hearings should be closed to the public. 5. A period of residence in the adoption home should be required before issuance of the final adoption decree. 6. Provision should be made for removal of children from homes found to be unsuitable. 7. Safeguards should be provided in related laws, such as relinquishment of parental rights, regulation of child placing services, determination of guardianship and custody of child.

Women Needed for Special Hospital Duties, Says Mrs. Roosevelt

Women are needed for other duties in military hospitals besides nursing, Mrs. Roosevelt said in her column *My Day*, which is released from Washington. They are required to become laboratory technicians, nurse's aides and in other ways to supplement the work of the registered nurses. "If a girl feels that she wants to work in hospitals but still does not want to take a nurse's training," Mrs. Roosevelt said, "there are many possibilities open in the armed services."

Public Health Nurses Paid High Tribute

High tribute to the work of public health nurses was paid by Dr. J. W. Bird, president of the Medical and Chirurgical Faculty of Maryland and secretary of the Montgomery County Medical Society. "They are of the greatest assistance to us these busy days, and long before the present emergency they were doing the same magnificent job, modestly and without acclaim," he said, in the course of an interview over the Blue Network.

Wallace Includes Medical Care in "Bill of Rights"

Before the Senate Commerce Committee, which voted 14 to 5 against President Roosevelt's nomination of Henry Wallace as secretary of commerce, Mr. Wallace expounded his economic bill of rights, sixth item of which was "the right to adequate medical care and the opportunity to achieve and enjoy good health." "As Selective Service has revealed," Mr. Wallace said, that "too large a proportion of our younger men now fall below reasonable health standards, this is a warning signal to America with respect to the state of health of all segments of our population. This condition calls for immediate and drastic

action. We must see that medical attention is available to all the people. But this health program must be achieved in the American way. All persons should have the right to go to the doctor and hospital of their own choosing. The federal and state governments should work hand in hand making health insurance an integral part of our Social Security program just as old age and unemployment benefits are today. We need more hospitals and doctors. We should make sure that such facilities are available and that we build hospitals in every community, rural and urban, that does not now have such facilities for all of its people. We must not be content to provide medical attention for people after they become sick. We must implement and extend our knowledge of maximum health as well as prevention of sickness. The government should appropriate needed funds to finance a greatly expanded program of medical research in private and public institutions."

Medical Legislation

MEDICAL BILLS IN CONGRESS

Bills Introduced.—S. 406, introduced by Senator Downey, California, provides for health programs for government employees and contemplates the utilization of osteopathic services in connection with any care to be provided government employees under the bill. H. R. 1666, introduced by Representative Rogers, Massachusetts, provides for the registration, selection and induction into the armed forces of qualified graduate female nurses. H. R. 1699, introduced by Representative Short, Missouri, proposes the establishment of an Optometry Corps in the Medical Department of the United States Army. H. R. 1688, introduced by Representative Davis, Tennessee, would authorize the President to appoint as commissioned officers in the Medical Corps of the Army and the Medical Corps of the Navy, on recommendation of the Surgeon General of the Army or the Navy, as the case may be, x-ray technicians who are regularly registered to practice as such in any state or the District of Columbia. H. R. 1661, introduced by Representative Rogers, Massachusetts, proposes the establishment of a permanent Veterans Medical and Hospital Corps in the Veterans Administration. This corps will consist, it is contemplated, of a Medical Corps, a Nurse Corps, a Corps of Laboratory Technicians, a Corps of Physical Therapists and Occupational Therapists, a Corps of Pharmacists, a Corps of Dietitians, a Corps of Librarians and a Corps of Social Workers. H. J. Res. 23, introduced by Representative Voorhis, California, proposes to establish the first week in October of each year as National Employ the Physically Handicapped Week. S. 143, introduced by Senator Thomas, Utah, provides that commissioned and warrant officers placed in St. Elizabeths Hospital or in certain United States Public Health Service hospitals shall be liable to pay such rate per day as may be prescribed by the President. H. R. 1764, introduced by Representative Chapman, Kentucky, proposes to amend the Insecticide Act of 1910 so as to provide that any white powder insecticide or fungicide containing arsenic in its elemental form or any of its combinations, or fluorine in any of its combinations, shall, unless deemed unnecessary by the Secretary of Agriculture for the protection of public health, be considered to be adulterated unless it is distinctly colored in accordance with regulations promulgated by the Secretary. H. R. 584, introduced by Representative Rogers, Massachusetts, provides that any World War ex-serviceman shown to have active pulmonary tuberculosis of a compensable degree shall be deemed to be totally disabled for purposes of compensation when hospitalized. H. R. 599, introduced by Representative Springer, Indiana, proposes to amend the existing law so as to prohibit the requirement of the taking of the so-called pauper's oath by certain applicants for hospital treatment or domiciliary care under veterans' laws. H. R. 592, introduced by Representative Spence, Kentucky, proposes to establish in the United States Public Health Service a division to promote water pollution control activities. S. 293, introduced by Senator Wagner, New York, for himself and Senator Wheeler, Montana, and H. R. 1102, introduced by Representative Jennings, Tennessee, propose to amend the Railroad Retirement Acts and the Railroad Unemployment Insur-

ance Act so as to provide, among other things, sickness and maternity benefits for employees. This legislation would authorize the administrative board to enter into agreements or arrangements with doctors, hospitals, clinics or other persons for securing the examination, physical, medical, mental or otherwise, of persons claiming, entitled to or receiving sickness or maternity benefits and the performance of services or the use of facilities in connection with the execution of the statements of sickness which must be filed by employees to obtain the benefits. H. R. 1658, introduced by Representative Philbin, Massachusetts, proposes to amend the Selective Training and Service Act so as to provide that medical statements be furnished, without request therefor, to persons discharged from the armed forces for disability. S. 200, introduced by Senator Russell, Georgia, provides for federal assistance in the maintenance, expansion and operation of school lunch and school milk programs. The bill would make available for the purposes indicated the sum of \$65,000,000 for the fiscal year ending June 30, 1945, and for each fiscal year thereafter such sums as may be necessary but not to exceed \$100,000,000 for any one fiscal year. H. R. 1209, introduced by Representative Walter, Pennsylvania, and H. R. 1108, introduced by Representative Abernethy, Mississippi, propose to establish uniform procedure relative to the proof of age or place of birth or of death. H. R. 1380, introduced by Representative Reed, New York, proposes to exempt certain religious, charitable, scientific, literary and educational organizations from the requirement of withholding tax at source on wages. H. R. 662, introduced by Representative Cannon, Florida, would amend the Social Security Act to authorize the payment of federal old age and survivors' insurance benefits to certain individuals who become permanently and totally disabled before attaining the age of 65. H. R. 1416, introduced by Representative Angell, Oregon, provides for the payment of annuities to blind persons. H. R. 313, introduced by Representative McMillan, South Carolina, provides for a uniform allowance for members of the Army Nurse Corps. H. R. 536, introduced by Representative Peterson, Florida, provides that a veteran's compensation, pension or retirement pay shall not be reduced during his hospitalization or domiciliary care.

DISTRICT OF COLUMBIA

Bills Introduced.—S. 125, introduced by Senator Bilbo, Mississippi, and H. R. 322, introduced by Representative Randolph, West Virginia, provide for the disposition of funds collected by the District of Columbia examining, licensing and other boards and commissions, including the Commission on Licensure to Practice the Healing Art. This legislation provides that fees and charges for licenses, permits, examinations, certificates and registrations shall be paid to the Collector of Taxes and by him deposited in the Treasury of the United States to the credit of the District of Columbia. H. R. 1625, introduced, by request, by Representative Randolph, West Virginia, provides for the abolition of the office of coroner and for the organization of the office of medical examiner for the District of Columbia.

STATE LEGISLATION

Massachusetts

Bills Introduced.—S. 273, to amend those provisions of the medical practice act relating to the limited licensing of interns and medical officers in hospitals maintained by the state or governmental subdivision, proposes also to permit such limited registration to a fellow and to interns, fellows or medical officers in private hospitals and in clinics. H. 372 proposes to establish a cash sickness compensation act to provide compensation for wage losses due to unemployment on account of sickness. H. 673 proposes to direct the department of public health to make an investigation and study relative to the decay of teeth resulting from a lack of fluorine.

Wyoming

Bill Introduced.—H. 47 proposes to authorize the state board of health to cooperate with the United States Public Health Service and the Children's Bureau in matters related to the prevention, treatment and control of diseases and to accept relevant grants which may be made by the United States, any of its agencies, or a private agency or foundation.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Changes in Health Officers.—Dr. Philip A. Bearg has been appointed health officer of San Luis Obispo County to succeed Dr. Harrison Eilers, who resigned to accept a similar position in Long Beach (*THE JOURNAL*, Nov. 25, 1944, p. 845).—Dr. William L. Denton, Bridgeport, has been named health officer of Mono County.

Physician Faces Imprisonment on Abortion Charge.—The San Francisco *Bulletin* recently reported that Charles Bacon Boudwin, Los Angeles, and his nurse, Mrs. Ella Berry, faced prison sentences of two to five years after they had been found guilty by a superior court jury of performing an abortion on a woman a year ago. Dr. Boudwin's license to practice medicine was revoked June 28, 1944 (*THE JOURNAL*, Aug. 19, 1944, p. 1153).

Changes in the Faculty at Stanford.—Among the recent changes on the staff of Stanford University School of Medicine, San Francisco, are the following:

Capt. Philip K. Gilman (MC), on leave of absence with the Navy, to clinical professor of surgery emeritus.

Dr. George W. Hartman to assistant clinical professor of surgery (genitourinary) emeritus.

Dr. Mary I. Preston to assistant clinical professor of pediatrics emeritus.

Dr. C. Frederic Fluhmann to associate clinical professor of obstetrics and gynecology.

The Musical Sons of Aesculapius.—Dr. Willard Lee Marmelszadt, intern at the Queen of Angels Hospital, Los Angeles, recently received the William Osler Medal of the American Association of the History of Medicine for a musical opus which has been deemed a noteworthy contribution to medical history. The work, entitled "The Musical Sons of Aesculapius," was begun while he was a student at Tulane University of Louisiana School of Medicine, New Orleans, where he graduated in 1944.

FLORIDA

Public Health Election.—Dr. Wieland W. Rogers, Jacksonville, was chosen president of the Florida Public Health Association at its recent annual meeting in Gainesville. Other officers included Dr. George A. Dame, Jacksonville, and Russell Broughman, sanitary engineer, Miami, vice presidents, and Dr. Edward M. L'Engle, Jacksonville, secretary-treasurer.

Personal.—Ross A. McFarland, Ph.D., medical coordinator of Pan American World Airways System, is in Miami conducting investigations in connection with alleviating crew and passenger fatigue on long range high altitude flights. Dr. McFarland, who is connected with the division of industrial research at Harvard Medical School, Boston, also is working on the control of insect borne infectious diseases by means of built in fumigating apparatus.—Dr. Herbert L. Bryans, Pensacola, was elected chairman of the Medical Advisory Committee of the State Rehabilitation Service at its organizational meeting held in Jacksonville recently. Other members of the committee are Drs. Frank L. Fort and Henry Hanson, Jacksonville; James L. Anderson, Miami, and Rollin D. Thompson, Orlando.

GEORGIA

Abner Calhoun Honored.—On December 21 the Fulton County Medical Society voted to name the Assembly Hall of the Academy of Medicine in memory of the late Dr. Abner Wellborn Calhoun, father of Dr. F. Phinizy Calhoun, Atlanta. The one hundredth birthday of Dr. Calhoun will be observed by Emory University School of Medicine in April with an ophthalmic seminar (*THE JOURNAL*, January 13, p. 110). The rededication of the assembly hall in honor of him will be a feature of the seminar.

ILLINOIS

New Chief of Tuberculosis Control.—Dr. Clifton F. Hall, Big Rapids, Mich., has been appointed chief of the division of tuberculosis control of the Illinois State Department of Public Health, effective January 15. Dr. Hall, who ment of Public Health, graduated at the University of Louisville School of Medicine in 1930 and the Harvard School of Public Health with a master in public health degree in 1938, has served five years

as director of the division of tuberculosis control of the Kansas State Board of Health and five years as health officer of the local bicounty health department that serves Meosco and Osceola counties with headquarters at Big Rapids, Mich.

CHICAGO

Clinical Conference Canceled.—The Chicago Medical Society announces that its second annual clinical conference, scheduled to be held February 27-March 1 at the Palmer House, has been canceled.

Industrial Meeting.—The Chicago Society of Industrial Medicine and Surgery held its midwinter scientific meeting at the Palmer House, January 29. Dr. Vinton E. Siler, Cincinnati, spoke, among others, on "Infections of the Hand."

Personal.—Mr. Patrick H. Costello, secretary of the National Association of Boards of Pharmacy, 77 West Washington Street, Chicago 2, has been elected to fill the vacancy on the board of trustees of the United States Pharmacopeial Convention caused by the recent death of Evander F. Kelly, Ph.D. (*THE JOURNAL*, Nov. 11, 1944, p. 715).—Miss Evelyn G. Johnson on November 22 was appointed executive secretary of the Chicago Hospital Council.

Refresher Course in Otolaryngology.—The fifth semi-annual refresher course in laryngology, rhinology and otology will be conducted by the University of Illinois College of Medicine, March 26-31. While the course will be largely didactic, some clinical instruction will be included. This course is intended primarily for ear, nose and throat specialists. As the registration is limited to thirty, applications will be considered in the order in which they are received. The fee is \$50. When writing for application please give details concerning school and year of graduation, and past training and experience. Dr. Abraham R. Hollender is chairman of the Refresher Course Committee, Department of Otolaryngology, University of Illinois College of Medicine, 1853 West Polk Street, Chicago 12.

Advisory Council on Hematology Research.—A medical advisory council has been appointed for the Hematology Research Foundation to assist in the allocation of its funds and related medical problems. Members of the council include:

Dr. Raphael Isaacs, director of the hematology department, Michael Reese Hospital.

Dr. Louis R. Limarzi, assistant professor of medicine, University of Illinois College of Medicine.

Dr. Andrew C. Ivy, Nathan Smith Davis professor of physiology and pharmacology and head of the department, Northwestern University Medical School.

Dr. Ludvig Hektoen, emeritus professor of pathology (Rush) University of Chicago School of Medicine.

Dr. Anton J. Carlson, professor emeritus of physiology, University of Chicago School of Medicine.

Dr. Italo F. Volini, dean of Loyola University School of Medicine.

Dr. Otto Saphir, pathologist of Michael Reese Hospital.

The objective of the Hematology Research Foundation, which was organized in 1944 (*THE JOURNAL*, May 13, 1944, p. 159), is to seek a cure or successful treatment for pernicious anemia, Hodgkin's disease, leukemia and other blood disorders through scientific research. Officers of the foundation include Mrs. Phillip Marcus, president; Mrs. Joseph Reader, treasurer, and Mrs. Jack Hornstein, executive secretary.

IOWA

Outbreak of Trichinosis.—What was said to be the state's greatest outbreak of trichinosis in ten years was reported in Lowden, January 12. Forty-three residents of the Lowden community area ranging in age from 8 to 65 years were ill at the time of this report. No deaths had been recorded.

KANSAS

Bulletin Taken Over by Menninger Foundation.—The *Bulletin* of the Menninger Clinic in Topeka was recently taken over by the Menninger Foundation, a nonprofit organization to further psychiatric research, education and treatment. The board of editors will remain the same and the bulletin will continue to publish articles on psychiatry, psychosomatic medicine, psychology and related clinical fields.

Venereal Disease Central Registry.—Harry L. Hinson Jr., assistant sanitarian, U. S. Public Health Service Reserve, has been assigned to the division of venereal disease control, Kansas State Board of Health, Topeka, to set up and operate a venereal disease central registry. According to the *New York Letter*, all reported cases of venereal disease in the state will clear through the central registry and will be tabulated by Mr. Hinson.

The Hertzler Lecture.—Dr. Warren H. Cole, professor and head of the department of surgery, University of Illinois College of Medicine, Chicago, delivered the tenth annual lecture under the Arthur E. Hertzler Lectureship at the University of

Kansas School of Medicine January 10. His subject was "Chronic Cystic Mastitis." In 1935 Alpha Upsilon of Phi Beta Pi established the Arthur E. Hertzler Lectureship in honor of Dr. Hertzler, Halstead. The lectureship is entirely supported by contributions of current active members of the fraternity.

MICHIGAN

Institute of Nutrition.—A new service organization has been established at the Michigan State College of Agriculture and Applied Science, East Lansing, to be known as the Institute of Nutrition, *Science* reports. It is planned to coordinate and integrate instruction and research in nutrition and to bring together workers in the field. The program in research and teaching of the college has been broadened to include the production, processing and consumption of food by man and animal. The institute will supply a contact between industry and the college to further research in food and nutrition and will supply the food industry with results from the laboratory. It in no sense competes with or supplants the research of the experiment station but rather will supplement it through additional funds. An administrative committee of seven has been named, with Carl F. Huffman, Ph.D., research associate of dairying at the college, as chairman.

Annual Clinic Day.—Mount Carmel Mercy Hospital, Detroit, held its annual clinic day on January 31. Among the speakers were:

- Dr. Carl S. Ratigan, Dearborn, chief of staff.
- Dr. Roger V. Walker, president of the academy of surgery.
- Dr. Franklin H. Top, Recent Experiences in Treatment of Poliomyelitis.
- Dr. Elmer Hess, Erie, Pa., Hypertension from a Urologic Point of View.
- Dr. Thomas H. McGavack, New York, Thiouracil in the Management of Thyrotoxicosis.
- Dr. Ward F. Seeley, Hemorrhage of Late Pregnancy.
- Dr. Henry K. Ransom, Ann Arbor, Carcinoma of Large Intestine.
- Dr. Clement A. Smith, Diabetes in Children.
- Dr. Max Thorek, Chicago, History and Clinical Application of Tubo-vulvar Gastrostomy.

Dr. Henry L. Smith was toastmaster at a luncheon meeting that was addressed by Dr. Leroy W. Hull, president, Wayne County Medical Society, Dr. Andrew S. Brunk, president of the state medical society, and Dr. Albert C. Furstenberg, Ann Arbor, on "Postwar Program for Medical Education." Dr. Edwin P. Jordan, Assistant Editor of *THE JOURNAL*, Chicago, addressed the evening dinner meeting at the Dearborn Inn on "Status of Medicine Today in Regard to Federal Control."

MINNESOTA

The Elias Potter Lyon Lecture.—On January 18 William C. Rose, Ph.D., professor of biochemistry, University of Illinois, Urbana, Ill., delivered the Elias Potter Lyon Lecture at the University of Minnesota Medical School, Minneapolis. His subject was "The Amino Acid Requirements of Man."

New Lectureships Created at Minnesota.—The J. B. Johnston lectureship in neurology has been created at the University of Minnesota Medical School, Minneapolis, from a gift from Dr. Johnston's widow, Mrs. J. B. Johnston, Los Altos, Calif. The lectureship is named to honor John B. Johnston, Ph.D., who served as professor of comparative neurology in the medical school from 1908 to 1915 and dean of the College of Science, Literature and the Arts from 1914 to 1937. It is planned to invite to the medical school annually a prominent neurologist to present the lecture. Announcement is also made of the new Leo G. Rigler lectureship in radiology endowed at the medical school by a group of friends and colleagues of Dr. Rigler, professor and head of the department of radiology, in recognition of his contributions to the teaching and practice of medicine, particularly in the field of radiology.

Another Citizens Aid Gift for Cancer.—In the recent final distribution of the assets of the Citizens Aid Society, Minneapolis, the trustees set aside funds totaling about \$16,000 to complete several research projects of the University of Minnesota Medical School, Minneapolis, which they had agreed to support. In addition the trustees set up a fund to provide \$12,000 annually for a period of ten years for the support of the Cancer Institute at the university. The Citizens Aid Society has for thirty years been supporting various cultural, educational and welfare activities in Minneapolis. Cancer has been one of the special interests of the society since 1924, when the trustees provided funds to construct the Cancer Institute addition to the University Hospital. The institute is a memorial to Mr. George Chase Christian, the son of Mr. Henry Christian, who established and endowed the Citizens Aid Society. Mrs. George Chase Christian is president.

MISSOURI

Personal.—Dr. Harriet H. S. Cory, St. Louis, executive director of the Missouri Social Hygiene Association, is visiting Puerto Rico, Cuba, Haiti and the Virgin Islands as a representative of the American Social Hygiene Association, assisting Kenneth Miller, Caribbean representative, in the organization of several local hygiene associations for the prevention of social diseases, according to the Pan American World Airways.

Medical School Addition.—St. Louis University School of Medicine, St. Louis, plans a \$500,000 addition to its \$2,600,000 postwar expansion program. Plans have been completed and work will be started on the medical school immediately on release of permission by the War Production Board, according to the *Journal of the Missouri State Medical Association*. The building will be four stories of brick and stone and will contain an amphitheater with accommodations for the entire student body.

Portrait of Hal Foster.—The Kansas City Society of Ophthalmology and Oto-Laryngology will present an oil painting of Dr. Hal L. Foster, Kansas City, to the American Academy of Ophthalmology and Otolaryngology. The presentation is to take place during the 1945 session of the academy, when the group will observe its fiftieth anniversary, provided the meeting is held. The national organization was founded by Dr. Foster at a meeting in Kansas City in April 1896. He held the office of secretary from 1896 through 1898 and became vice president in 1920. As it is planned to exhibit the picture at each annual meeting, it will be placed where it will be a reminder to the academy members of the man who founded the organization. At the 1944 annual session of the academy Dr. Foster was elected to the Honor Section.

NEW YORK

Hospital News.—Under the will of Mrs. K. B. Hofheinz, Rochester, the Rochester General Hospital, Rochester, will receive a bequest of \$8,000 for the children's department.

Personal.—Dr. Joseph H. Beattie, who has been practicing in the Greenburgh vicinity for forty years, was guest of honor at a dinner given by the medical staff of the Dobbs Ferry Hospital, Dobbs Ferry, of which he is a former president.

New York City

Work on Osteomyelitis with Penicillin.—The Hospital for Joint Diseases is conducting a special study on the treatment of acute and chronic osteomyelitis patients with penicillin. Physicians are requested to refer such patients to the hospital.

The Harvey Lecture.—George Wells Beadle, Ph.D., professor of biology, Stanford University, Calif., will deliver the fifth Harvey Society Lecture of the current series at the New York Academy of Medicine, February 15. His subject will be "The Genetic Control of Biochemical Reactions."

The Williams Assistantships in Obstetrics and Gynecology.—The Rockefeller Foundation has given a grant to Cornell University Medical College and the New York Hospital to establish the J. Whitridge Williams Assistantships in obstetrics and gynecology. The positions are specifically designed for postwar training of a selective group that military service has deprived of advanced training comparable to that possible in the prewar period, according to *Science*.

Hospital News.—Work has begun on an expansion program at the New York Hospital to increase the number of beds from 977 to 1,138. Material and equipment priorities were granted by the War Production Board, and work is to be completed by the middle of the summer. The program will cost about \$600,000 but will not require the construction of any new unit. A formerly unused floor will be developed for use, and other sections of the building will be altered and rearranged.

The Biggs Memorial Lecture.—Fred C. Bishopp, Ph.D., assistant chief in charge of research, bureau of entomology and plant quarantine, U. S. Department of Agriculture, Washington, D. C., will deliver the annual Hermann M. Biggs Memorial Lecture at the New York Academy of Medicine April 5. The lecture, which is under the auspices of the committee on public health relations of the academy, will be on "Medical and Public Health Importance of the Insecticide DDT."

Society Receives Gift.—At the meeting of the Medical Society of the County of Kings, December 19, Mrs. James M. Kingsley, Boonton, N. J., niece of the late Dr. Joseph H. Hunt, presented to the society the silver trowel used at the

cornerstone laying of the society building on Nov. 10, 1898. This trowel was used by Dr. Hunt, then president of the society. Mrs. Kingsley also gave the society the silver mounted gavel presented to Dr. Hunt, as president, at the 79th annual meeting, held Jan. 15, 1900.

Convicted for Abortion.—Dr. Charles Victor Dukoff was sentenced on December 15 to serve from two to four years in Sing Sing on each of five counts charging him with performing abortions and for which he had been convicted a week earlier. The sentences are to run concurrently. The physician was said to be indicted after a raid on his office last January, after which he was charged with the conduct of a "wholesale" abortion practice. It was said that he had received from \$150 to \$250 for each abortion.

Diagnostic Service for Tropical Diseases.—The New York City Department of Health has established a tropical disease diagnostic service which provides both laboratory and clinical facilities and has the advice and assistance of the specialists on the tropical disease staff of the DeLamar Institute of Public Health, Columbia University. Dr. Wheelan D. Sutliff, assistant director of the bureau of laboratories, is in charge of the laboratory work, and Dr. Howard B. Shookhoff of the bureau of preventable diseases is in charge of the epidemiology aspects. The address of the tropical disease diagnostic service is 600 West 168th Street, Room 704, New York 32.

OHIO

Personal.—Dr. Alice M. Bustin, Columbus, has been appointed medical member of the state board of cosmetology for a term ending Nov. 1, 1947. She succeeds Major Thomas D. Santurello, M. C., who has been in the medical corps of the army for more than two years.

Commonwealth Grant for Work on Chemical Factors in Disease.—The Commonwealth Fund of New York has allocated \$32,600 to assist Enrique E. Ecker, Ph.D., professor of immunology, Western Reserve University School of Medicine, Cleveland, and the Institute of Pathology, to continue his work for two more years on the "chemical factors involved in the resistance to disease." The grant will enable Dr. Ecker to add a physical chemist to his staff.

Faculty Appointments at Ohio University.—Dr. George H. Ruggy, assistant professor of physiologic chemistry and pharmacology, has been appointed to the new position of junior dean in the Ohio State University College of Medicine, Columbus. Dr. Bruce K. Wiseman has been appointed chairman of the department of medicine, succeeding Dr. Charles A. Doan, who was recently named dean of the medical school (THE JOURNAL, Dec. 16, 1944, p. 1041). Dr. Ruggy graduated at the University of Chicago School of Medicine in 1940 and has been a member of the staff of Ohio State since 1932, serving successively as graduate assistant, instructor and assistant professor except while he was at the University of Chicago and the year 1940-1941, when he was house officer at Blodgett Memorial Hospital, Grand Rapids, Mich. Dr. Wiseman graduated at the Indiana University School of Medicine, Indianapolis, in 1928; he has been a member of the Ohio staff since 1930, serving first as assistant professor of medical research. In 1936 he was named associate professor and in 1939 professor.

PENNSYLVANIA

Pittsburgh

Course in Slit Lamp Microscopy.—The committee on graduate education of the Allegheny County Medical Society is offering a course in slit lamp microscopy of the living eye, combined with a course in glaucoma surgery. Instruction will be by the department of ophthalmology of the Montefiore Hospital under the direction of Dr. Harvey E. Thorpe and his associates. The course will begin February 12 and run for three consecutive days. Information may be obtained from the committee on graduate education, Allegheny County Medical Society, 5092 Jenkins Arcade Building, Pittsburgh 22.

TEXAS

Grants to University.—The John and Mary R. Markle Foundation of New York has given a grant of \$2,500 to support the work of Eric Ogden, B.Sc., professor of physiology, University of Texas Medical Branch, Galveston, on blood flow and hypertension and a grant of \$3,300 for the support of studies on filariasis to be made by J. Allen Scott, Sc.D., associate professor of epidemiology and preventive medicine at the university.

Clinical Significance of Rh Factors.—A conference on the clinical significance of Rh factors will be held at the University of Texas Medical Branch, Galveston, February 9-10. The conference has been called at the suggestion of laboratory workers and Texas military hospitals. It will be under the general direction of John G. Sinclair, Ph.D., professor of anatomy, and Dr. Henry H. Sweets Jr., director of the John Sealy Clinical Laboratories.

WASHINGTON

Recommendations for Medical School.—The present legislature has been asked to appropriate \$450,000 to maintain the proposed school of medicine and dentistry at the University of Washington, Seattle. This sum, it is expected, would maintain the school for two years. At ensuing sessions of the legislature it is hoped to obtain additional appropriation of \$3,700,000 for maintenance and improvement. The Washington State Medical Association is sponsoring this project, which would consist of a standard four year course of instruction in medicine and dentistry. The present buildings, laboratory, library and other facilities of the university will allow the accommodation of 50 students in medicine and 50 in dentistry in the school year of 1946 if funds, largely for faculty salaries, are made available now. The project has been under consideration for a long period by committees of the state association in conjunction with the board of regents and the president of the university (THE JOURNAL, July 1, 1944, p. 666; December 2, p. 907).

State Health Department Reorganized.—Dr. Arthur L. Ringle, who has been serving in full time public health work in local health departments in Washington for a number of years, has been appointed director of the state department of health, Seattle. The position has been filled by Dr. John A. Kahl, assistant health director since Dr. Leland E. Powers was called to active duty by the U. S. Public Health Service on Dec. 15, 1944, for assignment to the United States Relief and Rehabilitation Administration. The state department of health has been reorganized into four functional divisions: division of preventive medical services, in charge of Dr. John L. Jones with the title of chief; the division of central administration, in charge of Dr. Ringle as state director of health; the division of public health engineering, with M. S. Campbell, C.E. serving as chief, and the division of local health services, with Dr. Kahl serving as chief of the division and assistant state director of health. The division of preventive medical services includes the communicable disease control section, in charge of Dr. Austin U. Simpson; the maternal and child hygiene and crippled children's section, in charge of Dr. Jones as acting head; the industrial and adult hygiene section, with Dr. Lloyd M. Farner as head; the mental hygiene section, a newly created unit, with Dr. George C. Stevens in charge (THE JOURNAL, Dec. 2, 1944, p. 907), and the dental hygiene section, with Francis I. Livingston, D.D.S., in charge. Dr. Ringle graduated at University of Colorado School of Medicine, Denver, in 1935.

WEST VIRGINIA

Personal.—Dr. Charles N. Scott, who has been serving as plant physician for the American Viscose Company at Nitro, has resigned to enter the Navy. Dr. John F. Cadden, who has been serving on the Viscose medical staff, with headquarters at Wilmington, Del., has been named acting plant physician.—Dr. Joseph P. Webb, instructor in medicine and research fellow in aviation medicine at the University of Cincinnati College of Medicine, has been appointed internist and medical director of the Chesapeake and Ohio Hospital, Huntington.

GENERAL

Conference on Medical Service Canceled.—The National Conference on Medical Service, scheduled to be held February 11 in Chicago, has been canceled in compliance with a request received from the Office of Defense Transportation.

Cancer Society Changes Address.—The American Cancer Society announces that its new address is 350 Fifth Avenue, Room 1211, New York 1. The new executive council of the society, under the chairmanship of Eric A. Johnston, plans to conduct a campaign to raise \$5,000,000 for research.

Journal of Clinical Psychopathology.—The Association for the Advancement of Psychotherapy announces that its official organ is the *Journal of Clinical Psychopathology and Psychotherapy*, formerly *Journal of Criminal Psychopathology*. The chief editor of the journal is Dr. Vernon C. Branham, Box 631, Monticello, N. Y. Dr. Emil A. Gutheil, 16 West 77th Street, New York 24, is secretary-treasurer of the association.

Special Society Elections.—Recently elected officers of the Central Neuropsychiatric Association include Drs Abram E Bennett, Omaha, president, Edwin Rogers Smith, Indianapolis, vice president, and William C Menninger, Topeka, Kan, secretary-treasurer.—Dr Walter A Sternberg, Mount Pleasant, Iowa, was named president-elect of the Mississippi Valley Medical Society recently and Dr Grayson L Carroll, St Louis, was installed as president. Other officers include Drs Louis H Jorstad, St Louis, Elmer E Nyström, Peoria, Ill, and Ernest J Lessenger, New London, Iowa, vice presidents and Harold Swanberg, Quincy, Ill, secretary-treasurer.

Society for the Study of Sterility Formed.—The recent organization of the American Society for the Study of Sterility has been announced with Drs Walter W Williams, Ithaca, N Y, chairman, and John O Haman, 490 Post Street, San Francisco 2, secretary-treasurer. These two physicians, with the following, constitute the board of directors: Drs Edwin C Hamblen, Durham, N C, Lewis Michelson, San Francisco, Abner I Weisman, New York, Lyman W Mason, Denver, and Edwin M Robertson, Kingston, Ont. The objectives of the society are:

The encouragement of scientific investigation of fertility and infertility.
The improvement of the diagnosis and treatment of infertility.
The correlation and dissemination of the information obtained from these studies.

Foundation for Mentally Abnormal Children.—The authorities of the state of New York have accepted the filing of the certificate of incorporation of a new national child care organization to be known as the Foundation for Child Care and Nervous Child Help, Inc, which will start its activities in the near future. The general purpose of the foundation is the advance of work to help mentally sick children. Research projects will be started and supported and various publications undertaken. President of the board of directors of the new foundation is Dr Leo Kanner of Johns Hopkins University School of Medicine, Baltimore. Ernest Harms, editor of the journal *The Nervous Child*, New York, is executive director. The foundation has its office at 30 West 58th Street, New York 19. As a major task the foundation intends to create a public school of exceptional children in New York, developed in such a way that it can be used as a sample for similar institutions in other cities. There is also planned an institution for the treatment of prepsychotic and predelinquent children. Connected with both institutions will be a training school for nurses, teachers and social workers for the care of subnormal children.

Awards for Work in Fertility of Human Beings.—John MacLeod, Ph.D., research associate in anatomy, Cornell University Medical College, New York, received a cash award of \$500 during the twenty-fourth annual meeting of the Planned Parenthood Federation of America at the Waldorf-Astoria, New York, January 24. The award was made possible by the Albert and Mary Woodard Lasker Foundation for his scientific research in the motility of human sperm cells. In simple terms Dr MacLeod has determined not only what factors cause the sperm cells to travel at the rate of about a quarter of an inch in two minutes in a congenial medium but the substance which may increase or decrease this activity. Because of this discovery it may be possible after further research to speed up or slow down the rate of speed of sperm cells, the former invaluable in the correction of infertility, the latter in the control of fertility. Honorable mentions went to Dr Samuel L Siegler, Brooklyn, for his volume on "Human Fertility in the Female" and to Dr Robert S Hotchkiss, New York, for his volume on "Human Fertility in the Male." Dr Felix J Underwood, executive officer, Mississippi State Board of Health, Jackson, will receive a second \$500 award for his state's achievement in including planned parenthood services as an integral part of its public health programs of maternal care. This action on the part of the Mississippi health department in 1944, under the direction of Dr Underwood, brings to six the number of states officially making planned parenthood a normal part of their public health program.

Narcotic Violations.—The Bureau of Narcotics, Treasury Department, Washington, D C, reports the following narcotic violations and the action indicated:

Dr Brady H Hughes, Birmingham, Ala, pleaded nolo contendere, Oct 25, 1944, to a charge of falsely making narcotic prescriptions, placed on probation for one year.

Dr Lyman W Gay, Lord formerly of Baltimore and of Bridgeport, Conn, and recently located in Newark, N J, was convicted in the state court of Connecticut April 13, 1944, of violation of the state narcotic law, sentence of one year in jail suspended.

Dr Stephen A Peters Jr, Gainesville, Ga, pleaded guilty Oct 23, 1944, to violation of the federal narcotic law, sentenced Oct 27, 1944, to a term of fifteen months.

Dr Frank Morse Nichols, Warsaw and La Grange, Ind, pleaded guilty Nov 3, 1944, to a violation of the federal narcotic law, placed on probation for one year.

Dr Fred A Stahl, Springfield, Mo, convicted of violation in the U S District Court at Springfield, of narcotic laws, Jan 28, 1944, and sentenced to serve a term of two years. In October the circuit court of appeals for the eighth circuit affirmed the decision of the lower court, which had been appealed by the physician.

Dr Guy S Bryan, Silver City, Miss, pleaded guilty in the U S District Court, Jackson, Miss, May 8, 1944, to violation of false execution of narcotic prescriptions, sentenced to serve a term of eighteen months.

Dr D Duane Parrish, East Syracuse, N Y, received on April 13, 1944, a suspended sentence of six months following his plea of guilty to violation of the federal narcotic laws, placed on probation for two years with the understanding that he would not deal in narcotics during that time.

Dr Linwood H Justis, Littleton, N C, sentenced to a term of one year and one day, effective Oct 16, 1944, for violation of the federal narcotic laws.

Dr John A Bentley, Allen, Okla, received a suspended sentence of six months on Oct 2, 1944 following a plea of guilty to violation of federal narcotic laws, placed on probation for five years.

Dr Raymond A Thompson, Pittsburgh, pleaded guilty in Erie Pa, May 23, 1944, to violation of the federal narcotic law and was sentenced to imprisonment for a term of two years.

Dr John Jacob Dommick, Prosperity, S C, pleaded guilty to violation of the federal narcotic law May 8, 1944 and was sentenced to a term of nine months in prison or to pay a fine of \$500, the fine was paid.

Dr Wendell Cotton, Rock Springs, Wyo, pleaded guilty at Cheyenne Wyo on May 22, 1944, to violation of the federal narcotic law and was sentenced to imprisonment for three years.

CORRECTION

Shortage of Nurses.—The editorial in *THE JOURNAL*, January 6, referring to the shortage of nurses stated that the number of nurses now on duty was 47,478. This figure is in error, since the total number of nurses on duty with the Army is 42,000.

Government Services

Appointments of Medical Officers in Public Health Service

A limited number of appointments of medical officers in the Regular Corps of the U S Public Health Service will be made in grades above senior assistant surgeon (captain). Applicants must be citizens of the United States, must have been graduated from a recognized medical school and must have had at least twelve years of professional experience since graduation from medical school. The examination will consist of an evaluation of information furnished on application forms and questionnaires supplied by the Surgeon General at the request of the applicant, a report of physical examination by Public Health Service medical officers and a written professional examination in practice of medicine, practice of surgery, public health, and a thesis on a subject selected by the applicant. Candidates will be rated competitively. Applications must be made before March 1. Written examination will be held on March 8 and 9 at places approved by the Surgeon General.

Bill to Create Research Institute in Public Health Service

Hon James E. Murray, U S Senator from Montana, on January 10 introduced a bill to establish a National Institute of Dental Research and to aid and encourage dental studies that will advance the prevention and treatment of dental diseases. It is proposed that the institute be established as a division of the National Institute of Health in the U S Public Health Service, an arrangement which would foster the development of dental research that is already being done by the public health service and other agencies, public or private, according to a statement of Senator Murray discussing the bill. If enacted, the Surgeon General of the Public Health Service would direct the new institute in its work with the assistance of a national advisory dental research council to include, in addition to the Surgeon General as chairman, six appointed members, at least four of whom shall be dentists. The institute would conduct and aid research on the cause, prevention and methods of diagnosis and treatment of dental diseases and conditions, promote coordination of dental research, provide fellowships in the institute and make grants-in-aid to universities and other institutions, secure the consultation services of other experts and cooperate with state health agencies. The bill proposes that Congress should authorize appropriations, up to a maximum of \$1,000,000, to erect and equip a suitable building after the war, and up to a maximum of \$730,000 a year to provide a budget to carry out the program. The institute would also be authorized to receive gifts from private sources.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 6, 1945.

Plan for Decentralizing London's Population

The unplanned growth of the largest city in the world has involved great evils. Between the two wars the population of greater London increased from 8,500,000 to 10,000,000. There was an orgy of house building, and new industries sprang up on sites unrelated to the shifting homes of the people. The average man of the new suburban housing estates travels 16 miles a day, at an annual cost of \$60, to get to and from his work. London's uncontrolled expansion became a scamper over the adjacent counties which produced little more than a jumble of building, services and transportation facilities, involving a waste of social capital, productive effort and human health and strength, overrunning valuable farm land, open spaces and beauty spots and enlarging the wilderness of stone and brick in which men live in juxtaposition but not in community. This intolerable process could easily continue when building is resumed after the war. But damage due to bombing from the air has given an opportunity for planning the reconstruction of outer London; under government orders, an important plan has been drawn up by Professor Abercrombie.

The main aim is to discourage the further growth of population and industry in the London region and to provide for their better distribution. The magnitude of the task is shown by the fact that over a million persons are involved in the transfer. This decentralization of population is only one part of the problem. The conservation of good agricultural land and the preservation of the green belt of outer London are examined also. The area dealt with amounts to 2,717 square miles. The green belt is to provide primarily for the recreation of Londoners, and only small population increases in the towns which it contains are to be allowed. Outside this is the "outer country ring," which contains distinct urban communities situated in land otherwise open and mainly agricultural. Here will be the principal reception area for the decentralized population. Additions will be made to the existing towns, and eight new towns, with a maximum population of 60,000 each, are to be established. The plan also proposes improvements in London's road system. Our roads are reputed to carry the densest traffic in the world, with an appalling toll of deaths. The need for traveling could be diminished by locating workers near their places of work. At present there is no such arrangement.

First Woman Professor at Oxford an Ophthalmologist

Dr. Ida Mann, well known for her researches in embryology of the eye, has had the title of professor conferred on her by Oxford University as long as she remains Margaret Ogilvie's reader in ophthalmology. She will receive a salary of \$10,000 as long as she refrains from private practice. This is the first time that a woman has been raised to the position of professor at Oxford. The appointment marks an important stage in the progress of the scheme for which the university has been collecting funds. Already \$500,000 has been raised of the \$1,250,000 required. The scheme is for research in the fundamental problems of vision, particularly biochemical problems.

Honor for Sir Thomas Lewis

The presidents of the Royal Society and the Royal College of Physicians have awarded the Conway Evans prize to Sir Thomas Lewis for his great contribution to our knowledge of the normal and abnormal mechanisms of the heart and

circulation. The prize, in accordance with the will of the late Dr. Conway Evans, is awarded for noteworthy scientific work. It has previously been awarded to physiologists—first to Sir Charles Sherrington in 1927, then to J. S. Haldane in 1930, and also to Sir Gowland Hopkins in 1938. The infrequency of the award indicates the importance of the work for which the prize is given. Unlike the previous recipients, Sir Thomas Lewis has worked in a field which he calls "clinical science" and which may be described as the application of scientific advances to clinical problems.

An Eminent Medical Centenarian

Sir Thomas Barlow, known best for his description of infantile scurvy ("Barlow's disease"), has attained the age of 100. He makes his annual Christmas appeal as president of the Royal Medical Benevolent Fund.

AUSTRALIA

(From Our Regular Correspondent)

Nov. 4, 1944.

Medical Research in Australia

For many years there has been growing criticism of the failure of the National Health and Medical Research Council in Australia to foster medical research. There are two reasons for this. The first is the limitation of funds, which are only £30,000 a year, and the second is the composition of the council, made up of men eminent in the field of health administration. Only one of the members could be described as a research scientist. This criticism was voiced at the time the council was originally formed, when it took over the duties of the Federal Health Council. Invidious comparisons are being made between the Australian Council for Scientific and Industrial Research and the National Health and Medical Research Council. The former is guided by a body composed of men eminent in research. The many fields in which it has functioned have amply demonstrated during the war the benefits of the scientific caliber of its composition.

A thoughtful contribution to the problem has been made by J. V. Connolly in "Some Australians Take Stock," published by Longmans, Green & Co. The usual story is that a university graduate visits overseas countries in order to gain experience and to meet other scientists eminent in his field. When such men are asked subsequently why they do not return to Australia, the usual answer is "The facilities there are not good enough." It is felt that brains and scientific ability are not among the commodities we can afford to export. Inevitably there will be among English speaking countries some interchange of people possessing special qualifications. Indeed, in many cases the migrant has adapted his training so effectively to the environment of his adopted country that he has been able to contribute noticeably to its development, but in the present instance the exodus is not part of a natural interchange and really constitutes an undesirable and avoidable loss.

A study of the ultimate settling place of the Rhodes scholars of Australia reveals that of those who were selected prior to 1927 more than half the graduates in medicine are now residing outside Australia. The example taken from the movement of Rhodes scholars has its parallel in the considerable number of Australians who have gone abroad without any of the inducements provided by scholarship awards. More than two hundred graduates from the Australia university alone are more or less permanently settled in England at the present time. Tuition in Australia is satisfactory. Technical education in the various schools is of an extremely high standard, although general education is possibly less so. The tendency for graduates to go abroad is welcomed, but the trouble is that too many of them remain abroad, and the net result is that Australia loses an influence that she can ill afford to be without.

A study of the wider field of medical practice in Australia seems justified to see if some light can be thrown on this problem. The first question that might be asked is "Is the medical profession in Australia overcrowded?" There is 0.74 medical graduate per thousand of population in Australia. This can be compared with England, where the figure is 0.85 per thousand. The factor of distance should be remembered when considering the percentage of medical graduates in Australia, since there is not the same concentration of population that one finds in other countries. Bearing this geographic factor in mind, it is fair to say that Australia is far from being oversupplied with medical practitioners. And yet, in spite of the apparently uncrowded field in Australia, a considerable number of Australian surgeons were practicing abroad before the war, and it seems that the surgeon particularly is the one who is most anxious to leave Australia to practice overseas. One reason for this might be found in the high standard of training possessed by the medical graduate who takes up a small country practice in one of the Australian towns. It is the normal thing for him to do his own surgical work and to do it competently. Thus consulting surgeons in the city receive nothing like the same amount of general surgery that is sent to the surgeon, say, in England, where the general practitioner practices almost exclusively as a physician. Fees in Australia do not always compare favorably with those obtained by consulting surgeons abroad. There is a great disparity between the income of a leading surgeon in Sydney or Melbourne and the income of his counterpart in, say, London or New York. Also there seems to be reluctance in Australia to give to the man who has moved to the top of the profession the formal recognition that is accorded to him elsewhere, although this reluctance is not confined to medicine. One might sum up by saying that the Australian surgeon has less opportunity at home than he is able to find abroad, while men working as general practitioners, doing their own surgery, can make a much greater income than they would in most overseas practices. In Australia all the influences affecting the standards of the profession and other specialized occupations tend toward the production of a fairly uniform level. There is little encouragement of special aptitude and no particularly high reward for ambition. This insistence on uniformity is only a manifestation of the philosophy which pervades not only the national economy but the whole social fabric of the country. If the approximation of Jack to the same plane as his master does contribute to the well being of the majority, it also limits the upper level of achievement and in so doing contributes to the exodus of those who consider that their talents will be better rewarded abroad.

A study of the social background against which Australians live can throw some light on this problem. It is true that the average Australian working man is a good deal better off than his counterpart in almost any other community. But for the more highly educated man the position is somewhat different. A certain impatience with nonconformity and a noticeable tendency toward materialism seem to be the products of our social evolution. These things militate against the development of any national culture. Attention to this problem has been revived recently as an aftermath of the visit of Sir Howard Florey of Oxford University, co-discoverer of penicillin and now professor of bacteriology at the University of Oxford. It is significant that Sir Howard was a graduate of the University of Adelaide. He drew attention to the fact that Australian universities turned out well equipped young men with a flair for research, yet these men had to seek overseas fields for their work because the facilities in Australia were not good enough. The main difficulty, he felt, was that professors and others were overburdened with teaching and a good deal of outside work. They had no time to pursue research, and without research universities were lowered to the level of technical schools. Oxford University receives an

annual government grant of something like £100,000 a year, and the Medical Research Council of Great Britain, subsidized by the state, had been able to undertake valuable research into war medical problems, Sir Howard said. This Council is controlled by scientists and protected from direct political interference. It is unfortunate that scientists, although strong in brain power, are weak in voting power. The result is that ministers of the government have a habit of expressing fervid agreement with their views and doing nothing.

The Australian Optical Industry

At the outbreak of war Australia had only a rudimentary munitions industry, which did not include the manufacture in quantity of precision optical instruments. This task was assigned by the Ministry of Munitions to the Ordnance Production Directorate, and a munitions optical panel was set up under the chairmanship of Professor T. H. Laby of Melbourne University. The first problem was the manufacture of optical glass, and commercial firms engaged in its production showed a reluctance to make available the necessary details and technic. Information, however, was freely offered by American scientists, and the production of optical glass in quantity was followed by the successful production of many types of optical munitions—telescopes, range finders, gun sights, directors, periscopes, stereoscopes and other material. Some of these products were of British design, and some have been optically and mechanically designed in Australia. Australian made lenses and prisms exported to the United States were not only part of reverse lend lease but were a recompense for the original information so willingly supplied by the United States. About one in four Australians wears spectacles, according to War Organization of Industry officials, who have been investigating the manufacture of Australian spectacles. The output of spectacle frames in the commonwealth is steadily rising, but lenses are still being imported in small quantities. It is hoped that an Australian firm formerly engaged in making gun sights and range finders will be able to produce all the lenses necessary for the new Australian spectacle industry.

Australian Record for a Blood Donor

Mr. W. J. Murphy, secretary of the South Australian Blood Transfusion Service, seems to have a claim for the record as a blood donor in Australia. In nine years he has given eighty-three blood transfusions totaling about 100 pints. He has given two donations in the same day and on another occasion gave three in two weeks. As a result of the latter his hemoglobin was reduced to 75 per cent, but in three weeks it returned to 95 per cent. Blood has always been taken by the needle method, and at no time has his vein been cut down on. He is 42 years of age and weighs nearly 13 stone (83 Kg.). He has never displayed any reaction to the procedure, and his statements are endorsed by the medical registrar of the Royal Adelaide Hospital, South Australia.

Marriages

LEON JAIR TAUBENHAUS, College Station, Texas, to Miss Marjorie Vera Polon in New York, November 18.

WILLIAM ROSS BUTTRAM JR., Chattanooga, Tenn., to Miss Augusta Lee Rees of Columbus, Ga., October 28.

PATRICK M. BERZITO, Mayfield, Pa., to Miss Dolores Margaret Johnson of Milwaukee, October 24.

FRANK R. STEELSMITH to Miss Julia E. Cockburn, both of Des Moines, November 1.

JAMES F. LEMMON to Miss Betty Neva Shriner, both of Akron, Ohio, October 12.

EDWARD KEZUR, Toledo, Ohio, to Miss Isabel Schecter of New York, October 29.

LEONARD V. GRATKINS to Miss Mabel Johnson, both of Chicago, November 16.

Deaths

Henry Greenwood Bugbee * New York; Columbia University College of Physicians and Surgeons, New York, 1903; chairman of the Section on Urology of the American Medical Association, 1922-1923; founder member of the American Board of Urology; member, past president and secretary of the American Association of Genito-Urinary Surgeons, which in 1944 awarded him the Keyes Memorial Medal for his contributions to urology; member and past president of the American Urological Association; past president of the New York Urological Association; past president and secretary of the Clinical Society of Genito-Urinary Surgeons; served as president of the International Urological Association; fellow of the American College of Surgeons and the New York Academy of Medicine; member of the Quiz Medical Society, the Royal Medical Society of Budapest and the Société d'Urologie Française; member and past president of the alumni of St. Luke's Hospital, where he had interned from 1903 to 1906, retired Jan. 1, 1945 as director of urology and remained on the staff as consulting urologist; surgeon-in-chief Vassar Brothers Hospital, Poughkeepsie, N. Y., from 1906 to 1910 and later consulting urologist; served as urologist and president of the medical board at the Lawrence Hospital, Bronxville, and the Woman's Hospital; consulting urologist at the Mountainside Hospital, Montclair, N. J., Muhlenberg Hospital, Plainfield, N. J., and the Mather Memorial Hospital, Port Jefferson, N. Y.; author of numerous articles on urologic subjects, and a section in Lewis's Surgery; served on the board of editors of the *Journal of Urology*; died January 17, aged 63.

William Henry Keleher * Woburn, Mass.; Harvard Medical School, Boston, 1892; president of the Middlesex East District Medical Society in 1913; formerly medical examiner of the fourth Middlesex district; president of the board of trustees of the Woburn Public Library; a director of the Woburn Cooperative Bank; chairman of the city board of health; school physician at St. Charles Parochial School; on the courtesy staff of the Winchester Hospital, Winchester, and on the staff of the Charles Choate Memorial Hospital; died December 4, aged 75, of carcinoma of the rectosigmoid.

William Abel Alton, La Mesa, Calif.; Lincoln (Neb.) Medical College of Cotner University, 1897; served during World War I; died in the Paradise Valley Sanitarium and Hospital, National City, November 16, aged 70, of bronchopneumonia following an operation for intestinal obstruction.

Glenn Andrews, Montgomery, Ala.; University of the City of New York Medical Department, New York, 1886; member of the American Medical Association; formerly member of the state board of censors; for eighteen years state prison inspector; died December 9, aged 82, of tuberculosis.

John Dean Boylan * Milford Center, Ohio; Western Reserve University School of Medicine, Cleveland, 1916; past president, vice president and secretary of the Union County Medical Society; member of the Radiological Society of North America, Inc.; served overseas during World War I; formerly health officer of Mahoning and Union counties; died November 19, aged 54, of cerebral hemorrhage.

John Arthur Bundy, Hill City, Kan.; University Medical College of Kansas City, Mo., 1906; died November 26, aged 66, of coronary occlusion.

Edward P. Christensen * Two Harbors, Minn.; Rush Medical College, Chicago, 1906; served as city and county health officer; medical superintendent and part owner of the Two Harbors Hospital; formerly member of the city council; first president of the Rotary Club; died November 10, aged 64, of coronary thrombosis.

John Alexander Clarke * Greenwich, Conn.; Bellevue Hospital Medical College, New York, 1897; for many years medical examiner for Greenwich; school physician; on the staff of Greenwich Hospital, where he died November 23, aged 73, of Addison's disease.

Edward Ellison Coburn, Columbus, Ohio; Starling Medical College, Columbus, 1894; died November 5, aged 77, of heart block.

Joseph Hamilton Crampton, Seattle; University of Kansas School of Medicine, Kansas City, 1906; past president of the Idaho State Medical Association; served during World War I; died November 9, aged 60.

Edward W. Draper, Gainesboro, Tenn.; University of Tennessee College of Medicine, Memphis, 1935; member of the American Medical Association; died November 17, aged 36, of heart disease.

Frank Eugene Draper, Hyannis, Mass.; Harvard Medical School, Boston, 1886; member of the American Medical Association; a captain in the medical corps of the U. S. Army during World War I; formerly assistant ophthalmic surgeon at the Massachusetts General Hospital and the Boston Dispensary and clinical assistant at the Massachusetts Eye and Ear Infirmary, Boston; died November 23, aged 80, of arteriosclerotic heart disease.

Fred Clifford Eakins, Bannister, Mich.; Western University Faculty of Medicine, London, Ont., Canada, 1899; served during World War I; died in Leamington, Ont., Canada, November 10, aged 68, of carcinoma.

C. Francis Ewing, Wheaton, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1901; member of the American Medical Association; died in St. Francis Hospital, Breckenridge, November 28, aged 72, of coronary thrombosis.

Stanley Theodore Fortune, Ogunquit, Maine; Columbia University College of Physicians and Surgeons, New York, 1916; fellow of the American College of Surgeons; served during World War I; interned at the Presbyterian Hospital in New York; formerly resident physician at the Mary McClellan Hospital in Cambridge, N. Y.; died November 11, aged 57, of angina pectoris due to coronary sclerosis.

George B. Frantz, Coal Center, Pa.; Cincinnati College of Medicine and Surgery, 1886; for many years president of the Peoples Bank and Trust Company in California; died in California November 14, aged 82, of carcinoma of the rectum.

George Bryan Frey, Spartanburg, S. C.; Medical College of the State of South Carolina, Charleston, 1930; on the staff, formerly an intern and resident physician at the Spartanburg General Hospital; interned at the Greenville City Hospital, Greenville; formerly on the staff of the South Carolina State Hospital, Columbia; died November 11, aged 49, of coronary occlusion.

Patrick Joseph Griffin * Fertile, Minn.; Northwestern University Medical School, Chicago, 1913; served during World War I; at one time state food bacteriologist in the Chicago health department; served on the staffs of the Veterans Administration Facility at Hines, Ill., and Alexandria, La.; major, medical reserve corps, U. S. Army, not on active duty; died in the Veterans Administration Facility, Fargo, N. D., October 15, aged 64, of coronary arteriosclerosis and coronary occlusion.

Thomas Frederick Guffin, East Point, Ga.; Atlanta College of Physicians and Surgeons, 1912; member of the American Medical Association; on the staffs of the Grady Hospital and the Georgia Baptist Hospital, Atlanta, where he died November 22, aged 69, of uremia.

George L. Henderson * Conway, Ark.; University of Arkansas School of Medicine, Little Rock, 1907; served during World War I; died November 23, aged 73, of hemiplegia.

Herman William Hesse * Savannah, Ga.; University of Pennsylvania Department of Medicine, Philadelphia, 1900; served as president of the board of education, Kiwanis Club, the alumni associations of the University of Pennsylvania and the Newberry College and as chairman of the health committee of the city council; died November 24, aged 68, of cerebral hemorrhage and myocarditis.

Reuben Chandler Hill * Exeter, Calif.; Medical Department of the University of California, San Francisco, 1901; died November 20, aged 69, of coronary occlusion.

Maximilian Horn, Scarsdale, N. Y.; Medizinische Fakultät der Universität Wien, Austria, 1903; served as dermatologist on the staff of the Vanderbilt Clinic at the Columbia-Presbyterian Medical Center, New York; died in the White Plains Hospital, White Plains, November 25, aged 65, of acute pancreatitis.

Thomas Franklin James, Chicago; Chicago College of Medicine and Surgery, 1916; died in the Mother Cabrini Hospital November 21, aged 67, of cardiac dilatation and lobar pneumonia.

John Franklin Jones, Linn, Mo.; Beaumont Hospital Medical College, St. Louis, 1889; member of the American Medical Association; died November 22, aged 81, of cerebral hemorrhage.

Avedis Herold Kaye, New York; University of Michigan Medical School, Ann Arbor, 1916; on the staff of St. Luke's Hospital; died November 15, aged 58, of cerebral hemorrhage.

William James Knight, Newport News, Va.; Medical College of Virginia, Richmond, 1897; member of the American Medical Association; on the staff of the Riverside Hospital; died November 15, aged 72, of coronary thrombosis.

Edgar Lucius Langrum, Los Angeles; Meharry Medical College, Nashville, Tenn., 1924; served an internship at the Kansas City General Hospital, Kansas City, Mo.; died November 24, aged 46, of acute dilatation of the heart (myocarditis).

Frank Ridgeway Leeds, Michigan City, Ind.; the Hahnemann Medical College and Hospital, Chicago, 1899; served two terms as county coroner; formerly on the staff of the Michigan City Sanitarium; died in Jackson, Mich., November 16, aged 71, of pneumonia.

John Rhodes Lewis • Kansas City, Mo.; St. Louis University School of Medicine, 1925; interned at the Missouri Baptist Sanitarium in St. Louis; on the staff of the Research Hospital; died in St. Charles November 23, aged 48, of coronary thrombosis.

George Anderson MacElree, Philadelphia; Jefferson Medical College of Philadelphia, 1894; member of the American Medical Association; died November 21, aged 70, of coronary thrombosis.

Hugh Monroe Magee • Syracuse, N. Y.; Syracuse University College of Medicine, 1908; on the staff of the Crouse-Living Hospital, where he died November 19, aged 67, of thrombosis.

Charles Reuben McCreery • Tacoma, Wash.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1902; member of the North Pacific Surgical Association; fellow of the American College of Surgeons; attending surgeon, Tacoma General and St. Joseph's hospitals; died suddenly, November 14, aged 70, of coronary thrombosis.

James Kearney Miller, Sonora, Texas; University of Nashville (Tenn.) Medical Department, 1905; served during World War I; died in the Veterans Administration Facility, Legion, November 10, aged 66, of chronic pulmonary tuberculosis and tuberculosis of the larynx.

Lewis Emory Missimore, St. Louis; St. Louis University School of Medicine, 1904; served overseas during World War I; resident physician on the staff of the Christian Hospital; died November 9, aged 67, of heart disease.

Harland Addison Nichols, Miami, Ariz. (licensed in Texas under Act of 1907, in New Mexico in 1901 and Arizona in 1906); died September 5, aged 81.

Frederick Phillip Parker • St. Louis; Marion-Sims College of Medicine, St. Louis, 1893; died November 18, aged 75, of coronary thrombosis.

George M. Pate, Rowland, N. C.; Medical College of the State of South Carolina, Charleston, 1900; formerly bank president; died in Lumberton November 13, aged 67, of pneumonia.

Albert Victor Pettit • San Francisco; Stanford University School of Medicine, San Francisco, 1919; associate clinical professor of obstetrics and gynecology and acting executive of the department at his alma mater; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; member of the Pacific Coast Society of Obstetrics and Gynecology; since 1929 visiting obstetrician and gynecologist at the San Francisco Hospital; died November 19, aged 53, of coronary occlusion.

Frank E. Plummer, Dayton, Ohio; Baltimore Medical College, 1895; died November 15, aged 76, of cerebral hemorrhage.

Ward Hughes Powell • Minden, Neb.; University of Nebraska College of Medicine, Omaha, 1913; mayor of Minden; county medical adviser; died in the Clarkson Memorial Hospital, Omaha, November 13, aged 62, of coronary occlusion.

Percy Hartley Rushton, Providence, R. I.; Jefferson Medical College of Philadelphia, 1908; member of the staffs of the Homeopathic and Miriam hospitals; died November 18, aged 58, of hypertensive heart disease.

Albert Clifton Sellery • Long Beach, Calif.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1904; fellow of the American College of Surgeons; one of the organizers of the old Long Beach Medical Society, now the Harbor Branch of the Los Angeles County Medical Association; served as president of the board of directors of Seaside Memorial Hospital for six years; died November 23, aged 69.

Hermann K. Stockwell, Salem, Ore.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1902; served overseas with the Canadian Army during World War I; one of the founders of the Salem Clinic; on the staffs of the Salem General and Deaconess hospitals; died November 17, aged 64, of carcinoma of the liver.

Rose Winkler, Azusa, Calif.; Dunham Medical College, Chicago, 1898; died October 25, aged 81, of chronic myocarditis and pernicious anemia.

DIED WHILE IN MILITARY SERVICE

Hugh Grant Cramer, Campbell, Calif.; Stanford University School of Medicine, San Francisco, 1943; served an internship at the Santa Clara County Hospital, San Jose, and a residency at the Monterey County Hospital, Salinas; commissioned a first lieutenant in the medical corps, Army of the United States, on July 17, 1942; died near Pasadena Nov. 11, 1944, aged 28, in an aircraft accident.

Paul Drews Garvin, Boulder, Colo.; University of Colorado School of Medicine, Denver, 1926; member of the American Medical Association; served an internship at the St. Anthony's Hospital in Denver; formerly an intern and resident physician at the Children's Hospital, Denver; at one time assistant professor of clinical pathology at his alma mater; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on Dec. 13, 1940; began active duty in the Army of the United States on March 21, 1941; later promoted to captain and major; died in East Boston, Mass., November 24, 1944, aged 40, of coronary arteriosclerosis.

Herbert Robert Gore • Rochester, Minn.; Long Island College of Medicine, Brooklyn, 1933; interned at the Kings County Hospital in Brooklyn; commissioned a first lieutenant in the medical corps, Army of the United States, on Jan. 9, 1943; began active duty on Feb. 7, 1943; later promoted to captain; died in the Central Pacific area July 26, 1944, aged 36, in an airplane crash.

Lewis Cowan Ramsay • Memphis, Tenn.; University of Tennessee College of Medicine, Memphis, 1936; formerly an intern at the Los Angeles County Hospital in Los Angeles and served a residency in medicine at the Baptist Memorial Hospital; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on Sept. 26, 1938; began active duty in the Army of the United States on March 10, 1941; later promoted to captain and major; killed in an airplane accident in Hanford, Calif., Nov. 4, 1944, aged 34.

Seaton Sailer, Cincinnati; Long Island College of Medicine, Brooklyn, 1931; served an internship at the Roosevelt Hospital in New York and a residency in pathology at St. Luke's Hospital in New York; formerly assistant professor of pathology at the University of Cincinnati College of Medicine; at one time taught in the pathology department at the Medical College of the State of South Carolina, Charleston; member of the American Association of Pathologists and Bacteriologists; on the staff of the Cincinnati General Hospital; commissioned a major in the medical corps, Army of the United States, on Feb. 19, 1942; began active duty in June 1942; later promoted to lieutenant colonel; in charge of pathologic work at the Twenty-Fifth General Hospital in France; died in France Nov. 24, 1944, aged 39, of head injuries, shock and internal injuries accidentally incurred when struck by a truck along a highway.

Donald Meyers Ward • Colonel, M. C., U. S. Army, North Little Rock, Ark.; University of Colorado School of Medicine, Denver, 1933; interned at the Mercy Hospital, Denver; appointed a first lieutenant in the medical reserve corps of the U. S. Army on June 15, 1934; entered the medical corps of the U. S. Army in December 1934; later promoted to captain, major, lieutenant colonel and colonel; died in Guadalcanal Nov. 20, 1944, aged 38.

Rowland Daniel Wolfe • Lieutenant Colonel, U. S. Army, retired, Columbus, Ohio; George Washington University School of Medicine, Washington, D. C., 1908; Army Medical School, 1917; served with the American Expeditionary Forces during World War I; fellow of the American College of Surgeons; at one time superintendent of the Norfolk Protestant Hospital, Norfolk, Va.; entered the medical corps of the U. S. Army as a first lieutenant on Aug. 21, 1917; later promoted to captain, major and lieutenant colonel; retired from active duty on Feb. 28, 1939; recalled to active duty on Sept. 11, 1940; assigned to senior instructor in the ROTC Medical Unit at Ohio State University, where he served as assistant professor of military science; when the army special training program was established in June 1943 he was appointed commanding officer of the medical battalion; died in the Fletcher General Hospital, Cambridge, Sept. 28, 1944, aged 58, of thrombosis of the coronary artery.

Correspondence

THE RH BLOOD FACTORS

To the Editor—In the course of the recent rapid developments in the field of the Rh blood factors it has become necessary to invent a special vocabulary to express the new ideas and describe the new facts which have been discovered. This vocabulary has been tested by actual usage and has the approval of other workers to whom it was sent for their opinions. My purpose in this communication is to publicize the vocabulary more widely for the sake of uniformity in the use of nomenclature by all interested in the subject.

A. S. WIENER, M.D., Brooklyn

Anti rhesus serums. Immune serums prepared in rabbits, guinea pigs, goats and other animals by injecting them with the blood of rhesus monkeys. The term applies to serums like the original experimental serums of Landsteiner and Wiener, which agglutinate the bloods of 85 per cent of all white persons.

Anti Rho human serums. Human serums (usually obtained from mothers of erythroblastic infants) which gave reactions paralleling the anti rhesus serums, also known as standard anti Rh serums.

Rh testing. Examination of blood for the Rh factor, using either anti rhesus serum or anti Rho serum alone.

Rh reaction. Result of the Rh test, namely either Rh positive or Rh negative. When the terms Rh negative and Rh positive are used as adjectives they should be hyphenated, e. g. Rh-positive blood, Rh-negative individuals, but "the blood is Rh positive."

Rh sensitization. The act of becoming sensitive to the Rh factor. This may occur in one of two ways, namely, as a result of a transfusion of Rh-positive blood or as the result of pregnancy with an Rh-positive fetus. Natural sensitivity to the Rh factor does not occur, and only 1 in 25 to 50 Rh-negative persons exposed to the Rh antigen by transfusion or pregnancy becomes sensitized.

Rh factors are three in number designated as Rho, Rh and Rh' respectively.

Rh agglutinins. The animal anti rhesus agglutinins are all of the same specificity (85 per cent positive on white persons). The anti Rh agglutinins of human serums have three different specificities corresponding to the three Rh factors namely anti Rho (85 per cent positive on white persons), anti Rh' (70 per cent positive) and anti Rh (30 per cent positive).

Rh agglutinogens, Rh antigens. These are five in number: Rh₁ (or Rh'), Rh₂ (or Rh''), Rh', Rh and Rho.

Rh antiserums. Antiserums reacting with one or more of the Rh factors. Among human beings, in addition to serums containing only one sort of Rh agglutinin there are some with two Rh agglutinins. Five common varieties of human Rh antiserums are anti Rho, anti Rh', anti Rh'', anti Rh' (containing two agglutinins: anti Rho and anti Rh') and anti Rho.

Rh genes. The series of allelic genes which determine the various sorts of Rh agglutinogens and Rh blood types. The most common (the standard) genes are six in number: *rh*, *Rh'*, *Rh*, *Rho*, *Rh₁* and *Rh₂*. When discussing only the results of tests with the standard anti Rh serums, dividing persons into two types, Rh positive and Rh negative, only a pair of genes need be considered, *Rh* and *rh*. Obviously, Rh-positive persons may be either homozygous (genotype *RhRh*) or heterozygous (*Rh/rh*) while Rh-negative persons are always homozygous (*rh/rh*).

Rh blood types. Tests with anti Rho, anti Rh' and anti Rh'' yield eight standard types. The names of these types and their approximate frequencies among white persons in New York City are as follows: type *Rh₁Rh₂*, 13 per cent, *Rh₂*, 54.5 per cent, *Rh'*, 15 per cent, *Rho*, 2.5 per cent, *Rh'Rh''*, 1 in about 10,000, *Rh'*, 1.2 per cent, *Rh*, 0.3 per cent, and *Rh''*, 13.5 per cent. There are striking differences in the distribution among different races, for example, in Negroes type *Rho* exceeds 40 per cent, in Mongolian races *Rh'* is virtually absent, and so on.

Rh typing. Classification of individuals within one of the eight Rh types with the aid of anti Rho, anti Rh' and anti Rh'' serums. Note the distinction between "Rh typing" and "Rh testing."

Rh genotypes. The six standard genes pair to yield twenty-one different genotypes. These twenty-one genotypes in turn fall into eight phenotypes.

types identical with the eight Rh blood types because only a few distinct types of blood can be distinguished with the anti Rho, anti Rh and anti Rh' serums.

Rh classes. For convenience in analyzing genetic results the classification of persons according to their reactions only with anti Rh' and anti Rh'' is convenient. This yields four classes, W, U, V and UV, analogous to the four common blood groups. Each class includes a pair of Rh types as follows: class W, *Rho* and *Rh'*; class U type, *Rh₁* and *Rh'*; class V, types *Rh'* and *Rh''*; class UV, types *Rh₁Rh₂* and *Rh₂Rh''*.

Hr factor. The factor present in the agglutinogens determined by genes *rh₁*, *Rh₂*, *Rh* and *Rh'*. Hence only persons belonging to type *Rh₁* (provided they belong to genotype *Rh₁Rh₁* or *Rh₁Rh'*) or type *Rh'* (rare genotype *Rh'Rh'*) can possibly be Hr negative. Persons belonging to any of the other six Rh blood types are uniformly Hr positive. The common idea that infants with hemolytic disease due to the Hr factor are always Rh negative is wrong, such infants must in fact always be Rh positive.

Anti Hr serum. Serum capable of reacting with blood containing the Hr factor.

Hr tests. Tests with anti Hr serum.

Hr reaction. Results of the Hr tests, namely either Hr positive or Hr negative.

Rh incompatibility. Incompatibility based on difference with respect to one or more of the Rh factors.

Hr incompatibility. Incompatibility with respect to the Hr factor.

Rh blocking serum (antibody). A serum capable of reacting with blood containing the Rh factor but without producing agglutination; thus blocking the action of subsequently added anti Rh serums. A Rh-positive blood treated with Rh blocking serum can no longer be agglutinated by anti Rh serum. To date blocking antibodies of only one specificity have been found, namely, anti Rh.

FOUR GENERATIONS OF SACROILIAC ARTHRITIS

To the Editor—In reference to the editorial comment on four generations of sacroiliac arthritis (THE JOURNAL, Aug. 12, 1944, p. 1044), I am sorry I am stationed outside the continental limits and do not have access to the original article, but the comment must have caused most orthopedic surgeons either to laugh or to have apoplexy.

Is pain in the region of the sacroiliac joint diagnostic of sacroiliac arthritis? Does the presence of sciatica and tingling and swelling of the extremities make it more so?

Were any x-ray studies made in this group of remarkable people, who were for the most part manual laborers and osteoarthritis? Is not anatomic structure of the lumbar spine also hereditary?

Why do people with obvious arthritis have so few sacroiliac symptoms? Does not the sacroiliac joint fuse early and spontaneously in most cases of true arthritis?

Why go on? If the original article answered these questions you didn't give it justice in your comment. If it did not it does not merit other than condemnation in a supposedly scientific publication.

An analogous set of questions could be asked about the article in the issue of Jan. 29, 1944, page 269.

The idea that the sacroiliac joint is responsible for most pains in the back is one of the most persistent in medicine, and its perpetuation is given frequent stimulus even by some orthopedic surgeons.

It is impossible for me to understand why every one looks first at a joint having approximately the surface area of the palm of the hand and having little if any mobility, when there is a much more mobile and mechanically overloaded joint immediately above it which has the approximate area of the thumb nail.

DUNCAN C. McKEEVER, Commander (MC), U.S.N.R.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Misrepresentation by Physicians Employed by Defendant Concerning Extent of Injuries as Tolling Statute of Limitations.—While a passenger in one of the defendant's street cars in 1930 the plaintiff was injured by glass splinters piercing his right eyeball, allegedly because of the negligence of agents of the defendant. Acting in accordance with the directions of the defendant, the plaintiff went to "certain eye specialists" employed by the defendant and submitted to treatment by them at the defendant's expense. The physicians removed the splinters of glass from the eyeball and told him that the eye wounds would heal quickly and that he would "have no further trouble." They instructed him to go to no other physician but to return to them in two years for a final check-up. The plaintiff followed those directions, and when he returned two years later he was advised by them that, aside from the need for glasses, his injured eye was cured and in "perfect condition." In October 1942 the plaintiff perceived for the first time that the vision of his right eye was blurred, and when he consulted another physician in February 1943 it was discovered "that, due to the severance of the cellular system and delicate tissues of the eyeball which occurred at the time of the accident in 1930, and as a proximate result of the injury thereby received, a cataract had completely enveloped the eye and he was totally and permanently blind in the right eye." Notwithstanding the fact that the California statute provides a one year period of limitation for the commencement of an action for an injury resulting from the wrongful act or neglect of another, the plaintiff instituted action against the defendant in June 1943, alleging a causal relation between the negligence of the agents of the defendant in 1930 and in his loss of sight that followed in 1943. He contended that the applicable one year statute of limitation did not apply because the physicians employed by the defendant fraudulently concealed from him the nature of his injuries and that therefore the statute should not begin to run until he had ascertained his injuries. The trial court sustained a demurrer interposed by the defendant based, in effect, on the assumption that the statute of limitations precluded the maintenance of an action by the plaintiff, and the plaintiff eventually appealed to the Supreme Court of California.

In resolving the question of the correctness of the trial court's order, said the Supreme Court, the legislative policy in prescribing a period of limitation for the commencement of actions must be borne in mind. "The statute of limitations is a statute of repose, enacted as a matter of public policy to fix a limit within which an action must be brought, or the obligation is presumed to have been paid, and is intended to run against those who are neglectful of their rights, and who fail to use reasonable and proper diligence in the enforcement thereof. . . . These statutes are declared to be 'among the most beneficial to be found in our books.' 'They rest upon sound policy, and tend to the peace and welfare of society'; . . . The underlying purpose of statutes of limitation is to prevent the unexpected enforcement of stale claims concerning which persons interested have been thrown off their guard by want of prosecution." 1 Wood, Limitations, pp. 8, 9. However, it is provided by statute in this state that when the liability accrues by reason of fraud, the statute will not run until the fraud is discovered. Code Civ. Proc. sec. 338, subd. 4. Similarly, the courts of this state have held that when the defendant is guilty of fraudulent concealment of the cause of action the statute is deemed not to become operative until the aggrieved party discovers the existence of the cause of action. See Dawson, Undiscovered Fraud and Statutes of Limitation, 31 Mich. L. Rev. 591, at p. 593, notes, and Fraudulent Concealment and Statutes of Limitation, id. 875 at 877. In *Kane v. Cook*, 8 Cal. 449, for instance, it was held "that in all cases a fraudulent conceal-

ment of the fact, upon the existence of which the cause of action accrues, is a good answer to the plea of the Statute of Limitations."

The defendant contended that when a personal injury results from the wrongful act or neglect of another the cause of action accrues when the breach of duty occurred, and the statute then commences to run, on the theory that since the breach of duty of care and consequent impact followed by injury cannot be concealed, the fraud alleged to have been committed by the defendant cannot result in concealment of the cause of action, and therefore there is no fraudulent concealment within the meaning of the decisions previously referred to. But, answered the court, the plaintiff's right to relief in such cases is not dependent on technical legal definitions. In reality the ground of relief is that the defendant, having by fraud or deceit concealed material facts and by misrepresentations hindered the plaintiff from bringing an action within the statutory period, is estopped from taking advantage of his own wrong. The statute of limitations was intended as a shield for protection against stale claims, but a defendant may not use it to perpetrate a fraud on otherwise diligent suitors. Technical rules as to when a cause of action accrues apply therefore only in those cases which are free from fraud committed by the defendant. Section 338, subdivision 4, Code of Civil Procedure, recognizes the nonapplicability of those technical rules where the fraud of the defendant may be so concealed that, in the absence of circumstances imposing greater diligence on the plaintiff, the cause of action is deemed not to accrue until the fraud is discovered. Otherwise, in such cases, the defendant, by concealing his fraud, would effectively block recovery by the plaintiff because of the intervention of the statute of limitations. The same conclusion governs when the defendant under duty of disclosure has concealed known essential facts on which to base a recovery against him and thereby has hindered the plaintiff from bringing his action until after the statute would otherwise have terminated the period of limitation. We are not here called on to determine what acts of concealment might under the circumstances be deemed a legitimate hindrance to litigation. Whether in itself it is an actionable fraud or merely suffices to toll the statute on the original obligation, the breach of a duty to disclose known facts with the intention to and which does hinder commencement of an action until the action would be outlawed is a fraud practiced on the plaintiff which in conscience estops the defendant's reliance on the statute of limitations. The cases relied on by the defendant wherein it has been stated that the cause of action accrues at the time of the injury, and that the late discovery of the person responsible therefor or of the extent of the injury does not postpone the commencement of the statutory period, have heretofore been distinguished by this court as cases where fraud and deceit were not involved.

The defendant relied on two cases in particular as support for its position that fraudulent concealment of the extent of the injury cannot amount to fraudulent concealment of facts giving rise to the cause of action. In one, *Moloney v. Brockett*, 275 Mass. 479, 176 N. E. 604, the plaintiff sued two physicians for malpractice, alleging fraudulent concealment as excuse for late filing, and the trial court entered judgment on directed verdicts for the defendants. In overruling the plaintiff's exceptions, it was held that the failure of a doctor to disclose a cause of action to a patient could not be found to be a breach of his professional duty without evidence that he knew or believed that a cause of action existed; that there was no evidence that either the defendant knew or believed that he had performed or assisted in the performance of an unnecessary operation, and that the prediction as to the plaintiff's recovery made before the operation had no tendency to prove that they did not in good faith consider the operation advisable. In the other, *Ogg v. Robb*, 181 Iowa 145, 162 N. W. 217, L. R. A. 1918C, 981, the plaintiff was burned by x-ray treatments administered by the defendant in 1901. The burnt area did not heal but became malignant. In 1915 the plaintiff sued, alleging malpractice and fraudulent concealment by misrepresentations of the temporary character of the burn. A demurrer to the complaint was su--

tained. In holding that the statute of limitations was not suspended, the court attributed the representation of the defendant regarding the nature of the burn as an expression of opinion only. The statement of the facts considered in those cases, said the court, makes them readily distinguishable from the proposition contended for the plaintiffs. To the contrary of defendant's contention the following malpractice cases held that fraudulent concealment would foreclose the defense of the statute of limitations: *Groendal v. Westrate*, 171 Mich. 92, 137 N. W. 87, Ann Cas. 1914B, 906; *Schmucking v. Mayo*, 183 Minn. 37, 235 N. W. 633. In the Schmucking case it was said that in the presence of a fiduciary and confidential relation the fraud may more readily be perpetrated, designating that of physician and patient as such relationship, citing *Groendal v. Westrate*, supra, and that it was well to bear in mind that the statute does not run against actions for fraud until the fraud is discovered. It was also said:

"... a person should not be permitted to shield himself behind the statute of limitations where his own fraud has placed him. He should not be permitted to profit by his own wrong, and it would strike the moral sense strangely to permit him to do so. We are not aware of any principle of law or equity which affords immunity to a fraudulent defendant who by his deceitful practice induces a creditor to forbear his efforts to collect his debt until after it has become barred by the lapse of time."

The confidence, continued the court, growing out of the relationship of physician and patient imposes on a physician the duty of refraining from fraudulent concealment, that is, the duty of disclosure when he has knowledge of the facts. If that is the result in malpractice cases, then all the more was the defendant herein under a duty of disclosure when it voluntarily undertook to treat the plaintiff's injuries caused by its own breach of duty. Where there is a duty to disclose, the disclosure must be full and complete, and any material concealment or misrepresentation will amount to fraud sufficient to entitle the partly injured thereby to an action. *Kimball v. Pacific Gas & Elec. Co.*, 220 Cal. 203, 30 P. (2d) 39; *Vance v. Supreme Lodge*, 15 Cal. App. 178, 114 P. 83. Since its voluntary undertaking placed on the defendant the duty to disclose to the plaintiff the full extent of his injuries and the probable future disability to be expected therefrom, its false representation designed to conceal facts known to it and intended to prevent plaintiff's consulting other physicians, and thus hinder him from bringing action until after the running of the statutory period of limitations, must be deemed to amount to fraud on the plaintiff and to excuse any greater diligence on his part under the facts disclosed by the complaint. No fact as to the plaintiff's condition is alleged which could be deemed to have put him on earlier notice.

The only remaining question, said the court, is whether the defendant was bound by the alleged deceit and misrepresentations of its agents, the physicians it employed to care for the plaintiff. The agents' alleged deceit was not intended for their own benefit but for the pecuniary advantage of the defendant, their principal. If its agents' deceit should succeed, the defendant would reap the pecuniary gain therefrom. Thus its agents have employed the alleged deceit for the sole benefit of the defendant, and in such a case the facts must be deemed to be within the defendant's knowledge. The same principles therefore apply to make it unconscionable for the defendant to rely on the bar of the statute. As was said in *Lightner Mining Co. v. Lane*, 161 Cal. 689, 120 P. 771, Ann. Cas. 1913C, 1093, the fraud of the agents will be imputed to the principal for the purpose of preventing the running of the statute of limitations whether the principal was aware of it or not. The injustice of allowing such fraud to become successful by reason of lapse of time and concealment is an injustice to the plaintiff, and it is precisely the same in effect and extent whether the fraud is that of the defendant or its agents. The defendant, having received the benefit of its agents' fraud, has no equity in its favor.

The court accordingly concluded that the plaintiff had timely instituted the action against the defendant after his discovery of the fraud alleged and that the trial court erred in sustaining the defendant's demurrer. The judgment in favor of the defendant company was accordingly reversed.—*Pashley v. Pacific Electric Co.*, 153 P. (2d) 325 (Calif., 1944).

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, January 27, page 244.

BOARDS OF MEDICAL EXAMINERS

- ALABAMA:** Montgomery, June 26-28. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery 4.
- ALASKA:** Juneau, March. Sec., Dr. W. M. Whitehead, Box 561, Juneau.
- ARKANSAS:** * *Electric*. Little Rock, June 7. Sec., Dr. C. H. Young, 1415 Main St., Little Rock. *Medical*. Little Rock, June 7-8. Sec., Dr. D. L. Owens, 701 Main St., Little Rock.
- CALIFORNIA:** *Oral*. Los Angeles, March 3. *Written*. Los Angeles, Feb. 27-March 2. Sec., Dr. Frederick N. Scatena, 1020 N. St., Sacramento 14.
- COLORADO:** * Denver, April 3-6. Final date for filing application is March 19. Sec., Dr. J. B. Davis, 831 Republic Bldg., Denver.
- CONNECTICUT:** * *Homeopathic*. Derby, March 12-13. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven. *Medical*. Examination, March 13-14. *Endorsement*, March 27. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven.
- DELAWARE:** *Examination*. Dover, July 10-12. *Reciprocity*. Dover, July 17. Sec., Medical Council of Delaware, Dr. J. S. McDaniel, 229 S. State St., Dover.
- DISTRICT OF COLUMBIA:** * *Reciprocity*. Washington, March 12. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington 1.
- FLORIDA:** * Jacksonville, June 25-26. Sec., Dr. Harold D. Van Schaick 2736 S. W. Seventh Ave., Miami 36.
- ILLINOIS:** Chicago, April 3-5. Superintendent of Registration, Department of Registration and Education, Mr. Philip Harnman, Springfield.
- KANSAS:** Topeka, Feb. 19-20. Sec., Board of Medical Registration and Examination, 905 N. Seventh St., Kansas City 10.
- KENTUCKY:** Louisville, June 18-20. Sec., State Board of Health, Dr. Philip E. Blackerby, 620 S. Third St., Louisville 2.
- MAINE:** Portland, March 13-14. Sec., Board of Registration of Medicine, Dr. A. P. Leighton, 192 State St., Portland.
- MARYLAND:** Baltimore, June 19-22. Sec., Dr. J. T. O'Mara, 1215 Cathedral St., Baltimore.
- MASSACHUSETTS:** Boston, March 13-16. Sec., Board of Registration in Medicine, Dr. H. O. Gallupe, 413-F State House, Boston.
- MISSISSIPPI:** Jackson, Feb. 9. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson 113.
- MONTANA:** Helena, April 2-4. Sec., Dr. O. G. Klein, First Nat'l. Bank Bldg., Helena.
- NEVADA:** *Endorsement*. Carson City, Feb. 5. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.
- NEW HAMPSHIRE:** Concord, March 8-9. Sec., Board of Registration in Medicine, Dr. D. G. Smith, 77 Main St., Nashua.
- NEW JERSEY:** Trenton, June 19-20. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.
- NEW MEXICO:** * Santa Fe, April 9-10. Sec., Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.
- NORTH CAROLINA:** *Reciprocity*. Raleigh, Feb. 5. Sec., Dr. W. D. James, Hamlet.
- NORTH DAKOTA:** Grand Forks, July 3. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.
- OHIO:** *Endorsement*. Columbus, April. Columbus, June. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.
- OKLAHOMA:** * Oklahoma City, June 14-16. Sec., Dr. J. D. Osborn, Jr., Frederick.
- PENNSYLVANIA:** April 10-13. Act. Sec., Bureau of Professional Licensure, Department of Public Instruction, Mrs. M. G. Steiner, 358 Education Bldg., Harrisburg.
- RHODE ISLAND:** * Providence, April 5-6. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.
- SOUTH CAROLINA:** Columbia, June 25-27. Sec., Dr. N. B. Heyward, 1329 Blandina St., Columbia.
- VERMONT:** Burlington, June. Sec., Dr. F. J. Lawliss, Richford.
- VIRGINIA:** * Richmond, June 20-23. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.
- WEST VIRGINIA:** Charleston, Feb. 26-28. Commissioner, Public Health Council, Dr. John E. Offner, State Capitol, Charleston 5.
- WISCONSIN:** * Milwaukee, June 26-28. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls.
- WYOMING:** Cheyenne, Feb. 5-6. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

- CONNECTICUT:** Feb. 10. Address State Board of Healing Arts, 250 Church St., New Haven 10.
- DISTRICT OF COLUMBIA:** Washington, April 23-24. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington 1.
- FLORIDA:** DeLand, June 1. Sec., Dr. J. F. Conn, John B. Stetson University, DeLand.
- IOWA:** Des Moines, April 10. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.
- MICHIGAN:** Ann Arbor and Detroit, May 11-12. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.
- MINNESOTA:** Minneapolis, April 3-4. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis 14.
- NEBRASKA:** Omaha, May 1-2. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln.
- NEW MEXICO:** Santa Fe, Feb. 12. Sec., Miss Marion M. Rhea, State Capitol, Santa Fe.
- OKLAHOMA:** Oklahoma City, April 9. Sec., Dr. J. D. Osborn, Jr., Frederick.
- OREGON:** Portland, March 3. Sec., Board of Higher Education, Mr. C. D. Byrne, University of Oregon, Eugene.
- RHODE ISLAND:** Providence, Feb. 14. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.
- SOUTH DAKOTA:** Yankton, June 19. Sec., Dr. G. M. Evans, Yankton.
- TENNESSEE:** Memphis, March 27-28. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1935 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

40:227-346 (Nov.) 1944

- Occurrence of Some Unusual Salmonella Types in Man, Including a New Type. E Seligmann, I Saphra and M Wassermann—p 227.
- Studies on Staphylococci: III. Further Observations on Bacteriophage Typing of Staphylococcus Aureus. R T Tisk and Olga E Mordvin—p 232.
- Effect of Temperature, Humidity and Glycol Vapor on Viability of Air Borne Bacteria. K B DeOme and Personnel of U S Navy Medical Research Unit No 1—p 239.
- Investigations on Mosquito Transmission of Plasmodium Lophurae Cogge shall 1938. G M Jeffery—p 251.
- Avian Salmonellosis: Types of Salmonella Isolated and Their Relation to Public Health. W R Hinshaw, E McNeil and T J Taylor—p 264.
- *Seasonal Patterns of Measles and Chickenpox. Mildred Weeks Wells—p 279.
- Dynamics of Meningococcal Infections and Effect of Chemotherapy. J J Phair and E B Shoenbach—p 318.

Seasonal Patterns of Measles and Chickenpox.—Weeks Wells asserts that the rate of spread of an air borne infection is proportionate not only to the concentration of persons susceptible to it but also to the concentration of the causative micro-organisms in the varied atmospheres which they breathe. Rate of spread refers to the number of cases arising on the average from each previous case per unit of time corresponding to the incubation period. The concentration of micro-organisms in an enclosed inhabited atmosphere is an equilibrium between rate of addition (proportionate to the number of infective persons) and their specific infectivity—stage of disease, coincidence of a cold and so on—and rate of elimination, determined by ventilation. Epidemiologists have long been interested in the relation which the concentration of the susceptible in a population bears to the rate of spread of an epidemic disease, and it is now recognized that the "cyclical or intrinsic periodicities" is a function of the concentration of the susceptible. If a disease is air borne, certain consequences as to its seasonal patterns necessarily follow: 1. Since the rate of spread of the disease is proportionate to the concentration of the causative micro-organisms in inhabited atmospheres and since this concentration depends on ventilation, it follows that (a) in those localities where there is considerable difference between summer and winter temperatures, incidence of the infection will likewise show a pronounced sensitivity to seasonal change—that is, the ratio between maximum and minimum numbers of cases for given fractions of the year will be high; (b) seasonal patterns will vary with climate, since this affects the length of the season when ventilation is impeded by closed windows. 2. Since the rate of spread is proportionate to concentration of the susceptible, (a) seasonal patterns will vary in years of high and low incidence and (b) seasonal patterns will vary in urban and rural communities. The seasonal patterns of spread of measles and chickenpox, while differing greatly from each other, are both entirely compatible with the theory of transmission by air borne droplet nuclei. This does not prove the validity of the theory. Such proof can come only with the accumulation of evidence from many fields or from the successful control of respiratory diseases by air purification. The seasonal patterns of scarlet fever, on the other hand, suggest that means of transmission less amenable to control by ventilation than are droplet nuclei assume an important role in its spread.

American Journal of Surgery, New York

66:148-286 (Nov.) 1944

- Place of Surgery in Fibroids of Uterus. C. W. Barrett—p 148.
- *Hydrocele Its Relationship to Hernia. C. R. O'Crowley and J. Herzlich—p 157.
- Abdominal Pregnancy: Survey of Literature and Report of Unusual Case. A. R. Gardner and G. Middlebrook—p 161.
- Mesenteric Vascular Occlusion: Presentation of 15 Cases. B. J. Ficarra—p 168.
- Intravenous Anesthesia in Major Surgery: Use of One Per Cent Solution of Pentothal Sodium. J. K. Narat and E. Giraldo—p 178.
- Modern Fracture Deformity Reducing Splints. H. C. Mayland—p 182.
- Subphrenic Abscess, with Special Reference to Intrathoracic Complications. O. T. Clagett and W. S. Tunney—p 189.
- Plastic Reconstruction of Acquired Defects of Ear, with Case Reports. A. J. Suraci—p 196.
- Gallbladder Surgery. Five Year Survey. M. Burghardt—p 203.
- Perirenal Insufflation. T. L. Seager and J. J. Bottone—p 213.
- Total Disruption of Surgical Wounds of Abdominal Wall, with Reference to Plasma Proteinemia and Plasma Ascorbic Acid. W. G. Kravbill—p 220.
- Empyema of Lung. Review of Literature and Analysis of 169 Cases. P. J. Shank—p 224.
- Effects of Sulfanilamide Locally Implanted in Clean Wounds. J. I. Southworth—p 245.
- Improved Technique for Preparing Burned Dermal Graft in Hernial Repair. J. V. Scola—p 249.

Relationship Between Hydrocele and Hernia.—O'Crowley and Herzlich classify hydroceles into those of the testis, those of the cord and complications of these forms. They found 7 hernias in a series of 20 cases treated surgically. The literature gives the impression that this association is infrequent. Of the 20 cases of surgically treated hydrocele 3 involved congenital hydroceles all associated with hernia and 1 of these with an undescended testis; the rest were of the ordinary type. In all cases of hernia either intestinal or omental tissue was present in the sac; it was in the congenital hydrocele sac or in a separate pouch alongside the cord. All hernias were of the indirect variety. Of the 20 cases, only 1 hernial hydrocele and 3 uncomplicated hydroceles were on the left side. Most were diagnosed at operation, because frequently the hernia could not be discovered with certainty until then. Those communicating directly with the peritoneal cavity could not be diagnosed on examination unless the hernia was fairly large. The authors stress the frequency of association of hydrocele and hernia in the ages between 19 and 30. They recommend the inguinal approach for the repair of hydrocele in view of the possibility of an associated hernia.

Canadian Medical Association Journal, Montreal

51:397-492 (Nov.) 1944

- Sources and Modes of Venereal Disease Infection in the Royal Canadian Air Force. J. W. Tice—p 397.
- Ultraviolet Radiation in Surgery. R. Fraser—p 403.
- Anesthesia as Practiced on Active Service in the Navy. C. C. Stoddard—p 409.
- Causes of Rejection from Army and Incidence of Defects in Recruits. F. S. Park—p 412.
- Management and Prevention of Rheumatic Fever. R. R. Struthers—p 416.
- Thiouracil in Treatment of Thyrotoxicosis. E. Lozinski and J. Sminoitch—p 422.
- Pancreatic Necrosis in Ethyl Alcohol, Methyl Alcohol and Arsenic Poisoning. A. Branch—p 428.
- Fractures of the Wrist and Hand. H. S. Morton—p 430.
- Nonmalignant Duodenocolonic Fistula. J. B. McClintock—p 434.
- Wilson's Disease. R. Altschul and J. S. Brown—p 436.
- Scope of Industrial Medicine and Hygiene. J. G. Cunningham—p 439.
- *Estrogenic Origin of Uterine Fibromyomas. E. Shute—p 443.
- Toxic Hepatitis in Fever Therapy. R. M. MacDonald—p 445.
- Value of Electrocardiogram in Diagnosis of Heart Disease. L. T. Williamson—p 450.
- Primary Malignant Tumors of Small Bowel. R. F. Warren—p 451.
- Tuberculous Lesions of Other Organs Concurrent with Renal Tuberculosis. K. F. Davis—p 457.

Estrogenic Origin of Uterine Fibromyomas.—Shute analyzed the histories of 130 consecutive unselected women with fibromyomas for evidence of old functional menorrhagias or hypothyroid states. Fifty-two per cent of these gave a history of menorrhagia, probably functional, in the second decade. Sixty-three per cent of them were hypothyroid. The author was impressed by the sequence of functional menorrhagia in the

early decades, ending in organic menorrhagia in later decades. Furthermore, menorrhagia that seemed to be due to fibroid tumors in many instances quickly responded to treatment with antiestrogen such as thyroid or testosterone propionate. It is hoped that the gynecologist of the future will not be satisfied with the mere diagnosis and extirpation of fibromyomas. He will hope to recognize them early and prevent their growth and interference with function, or, better still, he will hope to recognize in the first two decades of life those women who are apt to develop fibroids later and take preventive measures accordingly.

Endocrinology, Springfield, Ill.

35:283-408 (Nov.) 1944

- Absorption of Subcutaneously Implanted Hormone Pellets. M. B. Shimkin, E. Lorenz, Rose Wyman and Sue Gray Norton.—p. 283
- Effect of Thyroxin Injections on the Thyrotrophin Content of Anterior Pituitary of Male Albino Mouse. A. Elizabeth Adams and Dorothy Jensen.—p. 296
- Effect of Testosterone Propionate on Body Weight and Skeletal System of Hypophysectomized Rats. Synergism with Pituitary Growth Hormone. Miriam E. Simpson, W. Marx, H. Becks and H. M. Evans.—p. 309
- Styrous Rabbit as Quantitative Assay Animal. J. T. Bradbury.—p. 317
- Chemical Studies on Melanogenesis in Normal and Adrenalectomized Rats. H. J. Spoor and Elaine P. Rall.—p. 325
- Anterior Pituitary and Its Relation to Adrenal Cortex in Water Diuresis. S. Joseph, Malvina Schweizer, Naomi Z. Ulmer and R. Gaunt.—p. 338
- Immune Reactions in Rabbits and Rats After Injections of Thyroid Globulin. A. E. Meyer, Constance M. Stuckney, D. Marine and J. Lerman.—p. 347
- Relation Between Light Dark Rhythms and Hour of Lay of Eggs Experimentally Retained in Hen. I. Rothchild and R. M. Fraps.—p. 355
- Effect of Various Gonadotropic Hormone Preparations on Blood Plasma Ascorbic Acid of Sheep and Rabbits. H. A. Lardy, L. E. Casida and P. H. Phillip.—p. 363
- Effect of Insulin on Urinary Excretion of Sodium, Chloride, Nitrogen and Glucose in Normal Rats. D. J. Ingie, J. S. Evans and Ruth Sheppard.—p. 370
- Iodine in Blood and Thyroid of Man and Small Animals. W. T. Salter and Elizabeth A. McKay.—p. 380

Journal-Lancet, Minneapolis

64:325-360 (Oct.) 1944

- Brucellosis (Undulant Fever). N. W. Stewart.—p. 344
- Infertility and Sterility: Six Year Study. C. M. McLane.—p. 346
- Is Vaccine Therapy of Value in Allergies of Children? A. V. Stoesser.—p. 351

64:361-388 (Nov.) 1944

- Middle Ear Disease in Children. L. R. Boies.—p. 361
- Vedication in Common Eye Diseases. E. D. Perrin.—p. 363
- Vegetable Foreign Bodies in Tracheobronchial Tree. P. G. Bunker.—p. 369
- Management of Strabismus in Children. A. D. Prangen.—p. 374
- Eye and Ear Complications in Acute Infectious Diseases. H. Brunner.—p. 375
- Life Changes in Disease of Thyroid. A. D. Ruedemann.—p. 376
- Retinal Vascular Changes and Reinitis in Hypertension. J. F. Gipner.—p. 380
- Trends in Rhinology. G. A. Larson.—p. 381
- Physical Allergy and Paranasal Sinus Disease. J. L. Andes.—p. 384

Journal of the Mount Sinai Hospital, New York

11:137-184 (Sept.-Oct.) 1944

- Some Recent Advances in Bacteriology and Virus Research, with Special Reference to Electron Microscopy. G. Schwartzmann.—p. 137
- Ulcerative Colitis. A. Winkelstein.—p. 159
- Pulmonary Embolus of Noncardiac and Nonpostoperative Origin. E. Neilman and S. Davison.—p. 164
- Intracranial Meningiomas. A. Kazin, D. Weller and J. Jaramillo.—p. 169

Journal of Nat. Cancer Inst., Washington, D. C.

5:77-150 (Oct.) 1944

- Research Activities of National Cancer Institute. M. B. Shimkin.—p. 77
- Relationships Between Spontaneous Tumors of Lung and Cutaneous Tumors Induced with Ultraviolet Radiation in Strain A Mice. H. F. Blum.—p. 89
- Histologic Changes in Adrenal Glands of Tumor Bearing Mice. A. J. Dalton.—p. 99
- Sulfur Distribution in Extracts of Normal and Neoplastic Tissues. Jesse P. Greenstein and Florence M. Leuthardt.—p. 121
- Review of Nutritive Requirements of Normal Mice for Growth, Maintenance, Reproduction and Lactation. H. P. Morris.—p. 115
- Properties of Mouse Mammary Tumor Agent. H. B. Anderson.—p. 143

Journal of Pharmacology & Exper. Therap., Baltimore

82:103-202 (Oct.) 1944

- Role of Blood Dilution in Aspirin Antipyresis. F. Guerra.—p. 103
- Observations on Analgesic Effect of Morphine During Continued Daily Administration of Small and Uniform Doses to Dogs. F. R. Goetzl, D. V. Burgill and A. C. Ivy.—p. 110
- Observations Bearing on Mechanism of Elimination of Quinine and Atrabrine from Circulation and Tissues. G. Chen and E. M. K. Geiling.—p. 120
- Observations on Effect of Hyperventilation on Reflex Respiratory Stimulating Action of Nicotine and Cyanide. P. S. Larsen, L. L. Smith, J. K. Finnegan and H. B. Haag.—p. 133
- Spontaneous Development of Arsenic Resistance in Trypanosome Equiperdum and Its Mechanism. H. Eagle and H. J. Magnuson.—p. 137
- Acute and Subacute Toxicity of DDT (2,2-bis(p-Chlorophenyl)-1,1,1-Trichloroethane) to Laboratory Animals. G. Woodard, A. A. Nelson and H. O. Cahery.—p. 152
- Percutaneous Absorption of DDT (2,2-Bis(p-Chlorophenyl)-1,1,1-Trichloroethane) in Laboratory Animals. J. H. Draize, A. A. Nelson and H. O. Cahery.—p. 159
- Studies on Veratrum Alkaloids: VI. Protoveratrine: Its Comparative Toxicity and Its Circulatory Action. O. Krayer, G. K. Moe and R. Mendez.—p. 167
- Clinical Studies on Digoxin (Digitaline Nativelle), with Further Observations on Its Use in Single Average Full Dose Method of Digitalization. H. Gold, M. Cartell, W. Modell, N. T. Kait, M. L. Kramer and W. Zahn.—p. 187
- Isopropyl Alcohol: Rate of Disappearance from Blood Stream of Dogs After Intravenous and Oral Administration. A. J. Lehman, H. Schwirna and Eleanor Rickards.—p. 196

Toxicity of DDT.—According to Woodard, DDT is quite insoluble in water but soluble in oils and organic solvents. The material used in this investigation was either dissolved in corn oil or used in the dry powdered state. Several species of animals and test methods were used. The authors were especially interested in the differences in susceptibility which were manifested both within and between species. DDT was found to be acutely toxic by mouth to small laboratory animals such as rats, mice, guinea pigs, rabbits and chicks in doses ranging from 150 to 750 mg. per kilogram of body weight. Acute doses may produce anorexia, tremors, depression and death. DDT is capable of causing subacute toxicity when given in small amounts in the diet for periods of from three days to twenty weeks. Definite signs of toxicity are produced by levels in the diet of 0.05 per cent (500 parts per million) for rats and mice, 0.1 per cent for guinea pigs and less than 0.05 per cent for growing chicks. Characteristic of DDT poisoning is the wide variation in individual susceptibility, making the estimate of a safely tolerated dose extremely difficult.

New England Journal of Medicine, Boston

231:609-621 (Nov. 2) 1944

- *Penicillin in Sulfonamide Resistant Gonorrhea: Review of 200 Cases. N. S. Scarcello.—p. 609
- Studies in Medical Sociology. III. The Relation of Mental Disorders to Race and Nationality. R. W. Hyde and R. M. Chisholm.—p. 612
- Physical Therapy in Wartime. K. G. Hansson.—p. 619
- Parenteral Fluid Therapy: II. Estimation of Losses Incident to Starvation and Dehydration with Acidosis or Alkalosis and Provision of Repair Therapy. A. M. Butler and N. B. Talbot.—p. 621

Penicillin in Sulfonamide Resistant Gonorrhea.—Scarcello reviews 200 cases of sulfonamide resistant gonorrhea in which treatment with penicillin was used. The penicillin was dissolved in sterile distilled water, 100,000 units being dissolved in 20 cc. The patients are given five intramuscular injections of 4 cc. (20,000 units) at two or three hour intervals until a total of 100,000 units has been administered. There were 27 patients who required two or more courses of penicillin. Twenty-nine patients developed complications. There were 3 patients with gonorrheal arthritis all of whom had an immediate good response to penicillin. Four patients with prostatic abscess showed immediate response to penicillin therapy. Seventeen patients had an acute epididymitis on entry, and 5 developed epididymitis following penicillin. Penicillin had little or no effect on this condition. Sulfonamide therapy should be continued as long as possible to keep the infection localized, even though clinical improvement is not noted. Irrigations and instillations, the cause of the majority of complications, should be avoided. The observations on the 200 cases convinced the author that penicillin has proved its worth in sulfonamide resistant cases of gonorrhea. All patients were returned to duty in one third of the time previously required.

New York State Journal of Medicine, New York

44:2399-2526 (Nov. 15) 1944

- War and Oxygen Therapy. J. H. Evans.—p. 2443.
Penetration of Allergens into Human Skin. F. Herrmann, M. B. Sulzberger and R. L. Baer.—p. 2452.
Fracture of Neck of Femur. S. Kleinberg.—p. 2460.
Evaluation of Use of Curare in Endoscopy. J. S. Silverberg and F. P. Ausbro.—p. 2468.
Fundamental Characteristics of Different Medicolegal Systems in the United States. B. M. Vance.—p. 2472.
Intradermal Reaction as Aid in Diagnosis of Granuloma Inguinale. B. A. Kornblith.—p. 2476.
Diabetes Mellitus and Arteriosclerosis: Effect of Duration and Severity on Arterial Changes. J. F. Hart and J. R. Lisa.—p. 2479.
Modern Treatment of Varicose Veins. W. M. Cooper.—p. 2483.
Spinal Fluid Findings in Cases of Syphilis in General Population of Males Between Ages of 18 and 38 Years, Without Detectable Neurologic Changes. F. P. Guidotti, R. N. Carrier and W. E. Stumpf.—p. 2488.

Public Health Reports, Washington, D. C.

59:1423-1454 (Nov. 3) 1944

- Infectivity of *Alycobacteria* for Chorioallantoic Membranes of Chick Embryos. G. L. Fite and B. J. Olson.—p. 1423.

59:1455-1482 (Nov. 10) 1944

- Prophylactic Effect of Sulfadiazine and Sulfaguanidine Against Mosquito Borne *Plasmodium Gallinaceum* Infection in Domestic Fowl (Preliminary Report). G. R. Coatney and W. C. Cooper.—p. 1455.
Relation of Particle Size to Effectiveness of Paris Green Used in Airplane Dusting for Mosquito Control. R. L. Metcalf and A. D. Hess.—p. 1458.

59:1483-1514 (Nov. 17) 1944

- Age and Sex Incidence of Influenza in Epidemic of 1943-44, with Comparative Data for Preceding Outbreaks. S. D. Collins.—p. 1483.

59:1515-1542 (Nov. 24) 1944

- Laboratory Method of Determining Potency of Typhoid Vaccine. J. J. Griffiths.—p. 1515.
Isolation of a Filter Passing Agent from the Rabbit tick *Haemaphysalis leporis-palustris* Packard. E. A. Steinhaus and R. R. Parker.—p. 1528.

Rhode Island Medical Journal, Providence

27:501-568 (Oct.) 1944

- Diagnosis of Peptic Ulcer. E. S. Emery Jr.—p. 509.
Medical Education—Old Purposes and New Methods. H. R. Viets.—p. 512.

27:569-632 (Nov.) 1944

- Carcinoma of Endometrium. G. W. Waterman.—p. 577.
Hemolytic Disease of the Newborn (Erythroblastosis Fetalis) in One of Twins. M. Adelm.—p. 580.
Case Against the Impacted Tooth. H. A. McGuire.—p. 580.
Cash Sickness Fund Illness Claims. H. J. Hall.—p. 594.

Southern Medical Journal, Birmingham, Ala.

37:597-678 (Nov.) 1944

- *Nutrition Survey in Rural North Carolina. D. F. Milam and R. K. Anderson.—p. 597.
*Enigma of Pellagra. R. E. Remington.—p. 605.
Lautzounis Periosteoscapuloplasty for Congenital Dorsal Subluxation or Congenital Overlap of Fifth Toe. B. B. King.—p. 614.
Abdominal Trauma with Rupture of Spleen and Kidney: Case. D. C. Peters.—p. 617.
County Medical Examiner System: Need for a New Order. R. R. Killinger and L. Y. Dyrenforth.—p. 618.
Determination of Renal Function in Congestive Heart Failure. J. A. Boon.—p. 622.
Onset of Diabetes During Infection: Case. H. J. John.—p. 625.
Acute Pharyngitis Due to Decompensation of Circulatory System. G. R. Laub.—p. 627.
Incidence and Epidemiologic Significance of Hemolytic Streptococci in a Florida Army Camp. A. M. Glazer and J. S. Gots.—p. 628.
Intravenous Anesthesia in Children. J. D. Holly.—p. 631.
Neurocytoma of the Adrenal and Neuroepithelioma of Retina: Case Reports. I. M. Wise.—p. 637.
Preliminary Note on Method for Rapid Examination of Endometrium. C. D. Bahl and G. S. McClelland.—p. 640.

Nutrition Survey in Rural North Carolina.—Milam and Anderson carried out a nutrition survey in Wayne County, in eastern North Carolina, where hookworm and malarial infections are only moderately prevalent. The first survey, an intensive one, was limited to one rural township of 5,000 population, of which 10 per cent, predominantly school children, were examined. The second, or "extensive, survey" comprised 900 individuals and was made up of 200 families. These families (120 white, 80 Negro) were distributed among the owner, tenant

and sharecropper population in proportion to the size of their groups. Vitamin C dietary intake data show for white and Negro groups that 40 per cent and 50 per cent respectively consumed less than one fourth of the recommended allowance. However, studies on the plasma revealed that the zero plasma levels are not so frequent as the low dietary intakes would presuppose. No scurvy was diagnosed. Vitamin A figures were much more favorable. Only 5 and 8 per cent respectively of white and Negro groups ingested under 25 per cent of the recommended allowances. More than 40 per cent of all groups except white children ingested the full recommended amount of 5,000 international units daily. Over 50 per cent of all groups consumed less than half of the recommended allowances of both thiamine and riboflavin. Calcium and iron intakes were considerably less favorable in Negro than in white groups. Forty-three per cent of white persons and 25 per cent of Negroes ingested three fourths of the recommended level of calcium. The protein intake data show that 60 per cent of white adults and 50 per cent of Negro adults ingested three fourths or more of the recommended level of 70 Gm. daily while 8.3 per cent of white adults and 12.6 per cent of Negro adults ingested less than half. The mean intake of calories remained constantly under 2,000. Home made biscuits characteristically baked from white flour with baking powder or soda added were the chief source of calories, constituting approximately 20 per cent of the calories for all groups. Fat pork was the second caloric source for adults and corn bread the third. The foods in order of their contribution to calories were, for white children, biscuit, milk, white bread, fat pork, cocoa and ice cream, and corn bread; for colored children, biscuit, corn bread, fat pork, fish, lean pork and milk. The authors evaluate vascularization of the cornea, gingivitis, hyperkeratotic skin and height-weight records. They conclude that, in view of the fact that the dietary intake levels were far below the standards recommended by the National Research Council, better planned dietaries with greater intake of protective foods seem to be the need. A nutritional educational campaign or improvement in economic, social and cultural conditions may be the essential basic procedure.

The Enigma of Pellagra.—According to Remington public health statistics show a decline in pellagra mortality rates in thirteen Southern states between 1928 and 1940 of 77 per cent, this being a much higher rate of change than for any other endemic disease. In South Carolina, where the death rate was highest, this decline has continued through 1943, amounting to 91 per cent of the rate in 1928. In this state there has also been a parallel drop in incidence of the disease, indicating that the improvement is due to some combination of causes which affects the entire population and not to remedial measures. The annual distribution of bulk dried brewers' yeast parallels incidence, indicating that it was used for treatment rather than for prevention. Distribution of money or food by federal relief agencies during the years 1935-1938 had no favorable effect on pellagra, there having been a slight increase in both incidence and mortality during those years. Mortality among Negroes is higher than among white persons but has decreased more rapidly. The means by which this population fraction of lowest economic status has been able to make superior progress in eradicating pellagra is not clear. The fact remains that the Negroes of the South, with less to do with and with less attention from welfare workers, have been able to make substantially greater progress in reduction of pellagra than has the white population. The fact that they were able in depression years to show a decrease of 77 per cent as compared with 40 per cent for white persons (in South Carolina) is evidence that since 1928 the pellagra death rate has been influenced by other factors sufficiently potent to overcome in part the economic one. The female death rate from pellagra is about 2.5 times the male in Negroes and 1.75 in white persons. This sex difference is limited to the years of active sex life and suggests further investigation into the etiology of pellagra. Since pellagra incidence and mortality rates have fallen, it can be inferred that general malnutrition may have decreased to a somewhat similar degree. It is predicted that these rates will continue to decline and that the rate of decline may be accelerated by such efforts as the national nutrition program and the enrichment of refined cereal products with vitamins.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

67:69-140 (June) 1944

- Neurologic Complications of Dissecting Aortic Aneurysm. A. D. Weisman and R. D. Adams.—p. 69.
Distinctive Type of Encephalomyelitis Occurring Among Troops in Northern Territory of Australia: Discussion of 2 Fatal Cases. J. P. Horan, G. A. W. Johnston, J. H. Halliday, J. O'Brien and E. W. Hurst.—p. 93.
Review of Some Recent Observations on Demyelination. E. W. Hurst.—p. 103.
Fiber Interaction in Injured or Compressed Region of Nerve. R. Granit, L. Leksell and C. R. Skoglund.—p. 125.

British Medical Journal, London

2:489-520 (Oct. 14) 1944

- Control of Bacillary Dysentery. R. W. Fairbrother.—p. 489.
*Plasma Acid Phosphatase in Carcinoma of Prostate and Effect of Treatment with Stilbestrol. J. M. Watkinson, G. E. Delory, E. J. King and A. Haddon.—p. 492.
Medical Experiences in North Africa, 1943-1944. T. C. Hunt.—p. 495.
Analgesia in Labor: Record of 102 Cases Treated with Pethidine. J. A. R. Cripps, Barbara Hall and W. F. T. Haultain.—p. 498.
Spontaneous Lobectomy. J. W. Taylor.—p. 500.

Plasma Acid Phosphatase in Carcinoma of Prostate.—Watkinson and his collaborators describe a method for estimating acid phosphatase and values obtained for plasma acid and alkaline phosphatase in various clinical conditions and in normal controls, and for acid phosphatase in seminal fluid. Two specimens of seminal fluid from a case of eunuchoidism contained relatively negligible amounts of acid phosphatase. Of 10 cases of prostatic carcinoma, 6 showed a raised acid phosphatase content in the plasma; in 5 of these there was x-ray evidence of metastases in bone. Several of the results do not show great distinction between prostatic carcinoma with metastases and Paget's disease. The behavior of the plasma phosphatases in cases of carcinoma of the prostate in which the plasma acid phosphatase was originally raised was followed during treatment with diethylstilbestrol. The response shows a uniformity of pattern, the acid phosphatase falling abruptly to a normal level, which is then maintained for considerable periods, with a rise in alkaline phosphatase followed by a gradual fall. In 10 cases of carcinoma of the prostate 4 showed some degree of regression of the primary tumor under treatment with diethylstilbestrol, and secondary deposits in lymph nodes underwent regression in 3 cases. X-ray examination at three monthly intervals in cases with metastasis to bone revealed in some a progressive increase in density, while in others the deposits became more numerous during treatment or increased in size. With one exception all cases showed some symptomatic and general improvement in relief from pain, lessening of frequency of micturition, gradual increase in hemoglobin level, improvement in appetite and gain in weight.

Lancet, London

2:521-552 (Oct. 21) 1944

- Conservative Treatment of Abdominal Wounds. C. G. Rob.—p. 521.
New Drugs Active in Chemotherapy of Experimental Gas Gangrene. D. G. Evans, A. T. Fuller and J. Walker.—p. 523.
Desert Climate: Physiologic and Clinical Observations. W. S. S. Ladell, J. C. Walterlow and M. F. Hudson.—p. 527.
Congenital Absence of Sweat Glands. D. H. G. MacQuaide.—p. 531.
*Tragedy of Malignant Melanoma. Margaret C. Tod.—p. 532.
Venous Spasm Preventing Blood Transfusion. J. G. Humble and G. Belyavin.—p. 534.
Sulfanilamide Poisoning with Cerebral Manifestations. H. Reed.—p. 535.

Tragedy of Malignant Melanoma.—Tod thinks that there is no greater tragedy in medicine than the death from multiple metastases of a young patient who had been in perfect health until a small pigmented mole was removed for cosmetic reasons. Unfortunately ignorance regarding the great danger of interfering with any pigmented mole or "birthmark" still prevails. Casual excision, ligation or cauterization of pigmented moles has led to the rapid death of 34 patients referred to the Holt Radium Institute when the appearance of recurrence or metastasis gave the alarm. These 34 patients were among 100 seen

at the institute. It is never justifiable to remove, for cosmetic reasons, a pigmented lesion which shows no sign of active growth. A patient who wishes to have such a lesion removed must be strongly advised to leave it alone and warned that any form of minor treatment is dangerous. If he insists on removal, the operation must be in every way as radical as if the lesion showed signs of active growth. A patient may come for advice because a pigmented lesion has begun to grow (a) spontaneously, (b) after injury or (c) after injudicious treatment. If there is no doubt that a lesion likely to be a melanoma is growing, treatment must be radical. A patient may come with a pigmented lesion, which may or may not show signs of growth, and enlarged regional lymph nodes. If the regional lymph nodes are involved the treatment is surgical. Lymph nodes should not be treated by irradiation except for palliation when they are completely inoperable. A patient, when first seen, may have multiple metastases. When metastases are already present beyond the regional lymph nodes, cure is practically impossible. Palliative irradiation may be tried and sometimes prolongs life and prevents suffering by delaying the local breakdown of lesions on the surface until metastases in lung or liver end life in a more merciful way. The author lists results obtained among the aforementioned 100 patients: 50 are dead, and of the 50 who are alive 40 are well, whereas 10 have recurrences.

Khirurgiya, Moscow

2:5-54, 1944. Partial Index

- Plaster of Paris Cast for Prevention of Deformities of Lower Extremities After Gunshot Wounds. G. S. Bom.—p. 3.
Contribution to Compatibility in Blood Transfusion. D. N. Belenkiy.—p. 10.
*Refrigeration Anesthesia for Amputations of Extremities. S. V. Lobachev.—p. 16.
Skin Plastic in Restorative Surgery in Base Hospitals. F. L. Gektin.—p. 26.
Indications for Late Amputations After Gunshot Injuries of Extremities. Ya. L. Levi.—p. 35.
Anaerobic and Aerobic Flora of Foreign Bodies, of Bone Sequestrums and of Wound Secretions. L. A. Chernaya and E. O. Aberman.—p. 40.
Tetanus in Base Hospitals. E. L. Fayvishenskiy.—p. 44.
Treatment of Penetrating Wounds of the Neck. G. T. Drozhbov.—p. 49.

Refrigeration Anesthesia for Amputations of Extremities.—Animal experiments carried out at the Sklifarsovskiy Institute (Moscow) demonstrated that lowering the temperature of tissues between 5 and 10 degrees centigrade obtains satisfactory anesthesia for operative intervention. Refrigeration below this point leads to irreversible alterations in the tissues, while temperatures above 10 degrees do not procure adequate anesthesia of the tissues. Circulating blood in the vessels becomes concentrated under the influence of refrigeration, but its morphologic elements remain unaltered. Lowering of the temperature of the tissues causes lowering of biologic qualities of living protoplasm and interrupts nervous impulses, conductivity and sensitivity of nerve endings. Gradual cooling induces anesthesia without painful sensations. The pain sense is the first to disappear, followed by loss of the thermal sense and finally by loss of the tactile sense. Microscopic studies of the tissues refrigerated to 5 C. revealed no structural changes from normal tissues. Apparently the changes in an anesthetized extremity are of molecular alteration of colloid substances and cannot be recognized by microscopy. The advantages of this method of anesthesia, as observed in amputations of lower extremities in 100 cases of street trauma, demonstrated the safety of the method, complete anesthesia, elimination of narcotics, absence of operative shock and postoperative complications, and arrest of infection, including that of gas gangrene. The stumps healed readily. There were only 4 instances of postoperative suppuration of the wound. The growth of the micro-organisms is arrested during the process of refrigeration. After the period of refrigeration the micro-organisms again display capacity for growth and multiplication. However, their number is considerably diminished. The effect of refrigeration on shock is explained particularly by the alleviation of pain, while application of a tourniquet and refrigeration interferes with formation of toxins and their absorption. Refrigeration anesthesia is particularly indicated for sick, emaciated and septic patients.

Book Notices

Radiation and Climatic Therapy of Chronic Pulmonary Diseases with Special Reference to Natural and Artificial Heliotherapy, X-Ray Therapy, and Climatic Therapy of Chronic Pulmonary Diseases and All Forms of Tuberculosis. Edited by Edgar Mayer, M.D., F.A.C.P., F.A.C.C.P., Assistant Professor of Clinical Medicine, Cornell University Medical College, New York. Cloth. Price, \$5. Pp. 393, with illustrations. Baltimore: Williams & Wilkins Company, 1944.

This volume is intended for both the chest specialist and the general practitioner. It deals with light, x-ray and climatologic therapy as applied to chronic pulmonary diseases, including all forms of tuberculosis. The twenty-six chapters are prepared by twenty-three different authors. The section on light therapy consists of chapters on the physics of light radiation, physiologic action of light and sources of light. The section on artificial light therapy includes discussions of the effects of light from artificial sources on tuberculosis of the lungs, pleura, pharynx, trachea, bronchi, intestine, peritoneum, lymph nodes, urogenital organs, skin, middle ear and eye. The section on solar radiation and climatotherapy includes chapters on climate and weather effects on respiratory infections, solar radiation and climatotherapy in a cool, low altitude in the high, sunny Colorado Rockies, in the sunny Southwestern Desert, in a cold, moderate altitude, and solar radiation of tuberculosis in high, sunny altitudes. The section on x-ray therapy includes discussions of chronic nontuberculous mediastinal and pulmonary disease, intrathoracic tumors and tuberculosis of the cervical lymph nodes, of the intestine and peritoneum, skin, pelvic organs, bones and joints. Two chapters are devoted to the surgical versus conservative therapy in the treatment of tuberculosis of the bones and joints. An excellent summary is presented by Dr. Mayer on climatic, x-ray and light therapy of chronic pulmonary diseases and all forms of tuberculosis. This is a timely book and one much needed, since there has been considerable confusion in the minds of physicians regarding the efficacy, particularly of light and climate, in the treatment of various diseases. The editor's long experience in this field qualified him to select those persons best prepared to present the various subjects. Therefore in this book is to be found the latest and most authentic information on the subjects presented. It can be highly recommended to physicians everywhere.

Neurology of the Eye, Ear, Nose, and Throat. By E. A. Spiegel, M.D., Professor of Experimental and Applied Neurology and Head of Department of Experimental Neurology, Temple University School of Medicine, Philadelphia, and I. Sommer, M.D., Consultant Ophthalmologist and Otolaryngologist, Chicago Eye and Ear Hospital. Cloth. Price, \$7.50. Pp. 667, with 118 illustrations. New York: Grune & Stratton, 1944.

This is a tremendous piece of work. It seems to the reviewer that a separate book on the neurology of the eye and another on the neurology of the ear, nose and throat should have been written. By doing this more emphasis could have been placed on clinical cases and detail. There are four parts: neurology of the ear, neurology of the eyes, neurology of the nose, mouth, pharynx and larynx, and local symptoms of the brain stem and the cerebrum. This book is an English edition of the authors' oto-ophthalmo-neurologic except that it has been almost completely rewritten. Anatomy, physiology and pathologic disturbances of the nervous mechanisms related to the eye, ear, nose and throat are outlined. There are 1,719 references in the bibliography. The book is recommended to eye, ear, nose and throat residents as well as to neurologists interested in the eye, ear, nose and throat.

Poisonous Plants of Hawaii. By Harry L. Arnold, M.D. Boards. Price, \$2. Pp. 71, with 24 illustrations. Honolulu: Tongg Publishing Company, 1944.

This little book contains concise discussions of the common and dangerous plants of Hawaii, some notes on allergic reactions and Hawaiian mushroom-like fungi, a comprehensive list of all plants which have been listed as being poisonous and a bibliography. The volume has numerous illustrations and gives much useful information about poisonous plants and their remedial measures when needed. The volume should find wide use by the general practitioner in Hawaii.

Diseases of the Nose, Throat and Ear: A Handbook for Students and Practitioners. By I. Simson Hall, M.B., Ch.B., F.R.C.P.E., Surgeon to the Royal Infirmary, Edinburgh. Third edition. Cloth. Price, \$4.50. Pp. 459, with 90 illustrations. Baltimore: William Wood & Company, 1944.

The first edition of this manual was published in 1937. Other editions are that of 1941 and the present one. Like many of its kind, this work is based on lectures to students and general practitioners. Preceding each section there is a brief sketch of the anatomy concerned, but no bibliography is offered, although "the student is expected to refer to larger works." The commoner diseases, deformities and injuries of the nose are satisfactorily described, such as deviated septum, polyp, the various types of "rhinitis" including atrophic and syphilitic, hemorrhage, diphtheria and sinusitis. On page 163 under the heading "Removal of Adenoids Alone" the author describes the procedure of adenoidectomy under ethyl chloride and states that "in certain cases . . . it is desirable to remove the adenoids and to leave the tonsils . . . the converse is never the case." He takes the view that if there has been no history or clinical sign of "tonsil trouble" the tonsils may be left. This is contrary to American thought and practice. Tonsillectomy here is recommended as a preventive of subsequent throat infections, for it is thought to be ultraconservative to attempt to "save the tonsils" since later removal is likely to become obligatory. However, some authorities still cling to the British point of view. The final section of the book deals with the ear and is quite complete as to the types of otitis media seen in general practice and the complications arising therefrom. It is questionable, nevertheless, whether a detailed description of radical mastoidectomy and labyrinthectomy need be included in a handbook of this sort. The author's view on the use of the sulfonamides is safe and sane. He agrees that they are to be administered in the hospital only and under laboratory control.

Lumbo-Sacral Strain: A Handbook on Its Relief and Cure by Manipulative Therapy. By H. Vincent Langley. With foreword by N. Howarth Hignett. Cloth. Price, 6s. Pp. 24, with 12 illustrations. London: Research Books, Ltd.; distributed by Wm. Heinemann, Ltd., 1944.

This small volume begins with a foreword from a layman that is nothing more than a testimonial. In the introduction one finds that the same layman has corrected proofs of the book. In the introduction "the writer has attempted to demonstrate that lumbosacral and rotating lumbosacral strains are produced through faulty mechanism of the pelvis." This is not new to the orthopedic profession in any country. Although the author states that the physical signs are pathognomonic, a good observer would disagree because there are many other conditions of the low back which show the same signs, and here lies the danger of putting the book into the hands of practitioners who, for the most part, are not interested in orthopedic problems. The writer does not go far enough when he ascribes the causes of increased inclination of the pelvis to muscular relaxation. It has been demonstrated that a contracted fascia lata is also a cause. The symptoms described are sketchy and the area of tenderness is not often along the superior gluteal nerve but is due to spasm of the upper part of the gluteal muscle. His reference to high heels is not borne out by the facts; more men than women are now affected by lumbosacral strain. As a matter of fact, raising a heel may relieve a lame back within a few days. It is difficult to believe that the springing and the manipulations described will relieve back pain; e. g. side stretching of the spine is done while pressure is exerted on the second and the third lumbar and not below for fear that lumbosacral strain will be increased. Any one with a modicum of knowledge of the physiology of the spine knows that spinal movements are combined and that side counterpressure on the third lumbar will be transmitted to the lumbosacral junction. The exercises outlined on page 16 are known to most orthopedic surgeons and are simple, but the author is not definite about when they should be given or in what order, and there are no warnings about doing them too much or too long. One is left with the impression that this incomplete book should not be put in the hands of the general practitioner until he knows more about the general principles of physical medicine.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TECHNICS OF MASS IMMUNIZATION

To the Editor:—What technics in the sterilization of syringes and needles, the frequency of changing them and the use of topical antiseptics should be followed in mass inoculation of soldiers?

Rodney C. Larcom Jr., Captain, M. C., A. U. S.

ANSWER.—In consideration of the military necessity of carrying out required immunizations on large numbers of troops with as little interference with training and other duties as possible, it is necessary to adopt the simplest and most rapid procedure consistent with safety. The most careful aseptic technic must be exercised at all times.

The largest syringes are employed which will permit accurate measurement and delivery of the proper dose: 5 or 10 cc. syringes are usually satisfactory. These are initially sterilized by heat, filled with the vaccine or other immunizing agent and used until empty. The syringe may be refilled without resterilization if care is taken. The needle must be changed after each injection, a supply of freshly heat sterilized needles being kept on hand. If accidental contamination of the interior or tip of the syringe occurs or if blood enters the syringe, it should, of course, be discarded. Tincture of iodine, 70 per cent ethyl alcohol or an approved mercurial antiseptic should be used for skin sterilization, preceded by cleansing with soap and water if indicated. For smallpox vaccination, however, the arm should be prepared by washing with soap and water, ether or acetone and allowed to dry thoroughly before the vaccine is deposited on the skin; nonvolatile antiseptics, including alcohol, should be avoided, as they may inactivate the vaccine.

HEREDITY OF ALOPECIA AREATA

To the Editor:—Is alopecia hereditary? A woman 25 years old is bald except for a few patches of hair about an inch long. This alopecia began at the age of 7. What would be the probable result if she married and had children? There has been no family history of a similar condition.

M.D., Indiana.

ANSWER.—This patient has alopecia areata, the real cause of which is unknown. It is classed as a trophoneurosis due to some abnormality of the sympathetic nerves supplying the skin or its vessels; instances are commonly seen where there has been a preceding shock to the nervous system. It is most common in childhood and early adult life. "Sabouraud supplies the most convincing evidence that heredity plays a part, for he found that 22 per cent of 81 cases gave a history that other members of the family had the same disease. In Sabouraud's family groups six show a father and son affected, a seventh two brothers and the son of one of them. In one family a boy, his mother and the mother's brother and his maternal grandfather were all affected. In four families a generation is skipped: in one a boy and his father's brother had it, but his father escaped; in another a boy and his mother's brother had it but his mother escaped" (Cockayne, E. A.: *Inherited Abnormalities of the Skin*, London, 1933, Oxford University Press). A case in which there was evidence of the disease being inherited has never been seen by the writer. In view of the patient's family history, the chances of her offspring developing the disease seem small.

BLOOD LOST FROM TONSILLECTOMY

To the Editor:—I should like to know how much blood is lost during an average tonsillectomy under local and general anesthesia, and how this blood loss compares with some of the more common surgical procedures.

M.D., Illinois.

ANSWER.—A reasonably careful search of the literature has not revealed information dealing with quantitative losses of blood during tonsillectomy done under either local or general anesthesia. The blood loss must obviously vary depending on the method of operation, the surgeon and the individual case.

In general the blood loss is higher under general anesthesia than when a local anesthetic is used. This is due in the first place to the cerebral congestion caused by ether, which is the anesthetic most commonly used, and to the fact that some

vasoconstrictor, such as epinephrine, is commonly used in conjunction with the local anesthetic agent injected.

Those who do tonsillectomies know that occasionally the blood loss may be no more than a few drops. In other instances it may be 30 to 100 cc. or more, but the latter amount is probably not common.

During a hemiotomy or appendectomy the blood loss may be 100 to 200 cc.; in hysterectomy the loss is much greater. These figures are casual estimates. A careful study would require weighing the actual amount lost. The only discussion of this in a related field is the careful work done by Lyman Richards on blood loss during adenoidectomy (*Some Considerations of Adenoid Bleeding*, *Ann. Otol., Rhin. & Laryng.* 44:117 [March] 1935).

SPLENOMEGALY AND ASCITES

To the Editor:—For about two years a woman aged 35 has complained of intermittent nausea, vomiting, weakness, sweating, abdominal pain and bloating. She has become anemic, but there is no history of jaundice, hemorrhages or ecchymosis. There is no history of malaria, and the family history is negative for any previous similar trouble. There has been a loss of 55 pounds (25 Kg.) in five months. On physical examination the findings, except for slight pallor, are a large firm mass in the left upper quadrant, moderate enlargement of the liver and a small amount of fluid, essentially negative. Blood pressure is 110/80, hemoglobin 72 per cent, red blood cells 3,950,000, white blood cells 5,800, polymorphonuclears 64 per cent, small lymphocytes 30 per cent, large monocytes 6 per cent, urinalysis negative. Fragility test of the red blood cells showed an initial hemolysis at 0.38 per cent and complete at 0.30 per cent, bleeding time three and one-half minutes, coagulation time four and one-half minutes. A chest x-ray was negative. A preoperative diagnosis of Banti's syndrome was made. The abdomen was opened through an upper left rectus incision and a general exploration done. The liver was large and mottled in appearance and seemed to contain a lot of colloid-like material. It looked something like tapioca or the cross section of a colloid goiter. There was a little serous fluid present and a huge spleen with little evidence of perisplenitis. It was removed without difficulty. At the hilus of the spleen were a number of smooth nodules which appeared to be large, dark lymph nodes or multiple accessory spleens. There was congestive splenomegaly with foci of fibrosis and angiomatous areas with some hemorrhage. The lymph nodes showed chronic hyperplastic lymphadenitis. The diagnosis was advanced congested splenomegaly and chronic hyperplastic lymphadenitis. The convalescence was characterized by a rapid pulse, considerable fever, diffuse bronchitis and the development of ascites. The patient is in fairly good condition at present. The kidneys and bowels are normal, the appetite is good. The ingestion of fluids is limited and there is no medication other than capsules of bile salts. After return from the hospital, tapplings were instituted at weekly intervals and light fluid in 10 pound amounts recovered, but of this time tapplings at four day intervals produce 15 pounds of milky fluid. Could you suggest any treatment to lessen the accumulation of fluid?

M.D., Utah

ANSWER.—Ascites of this type is assumed to be due to obstruction in the portal circulation. In Banti's syndrome this obstruction is sometimes relieved by splenectomy. The failure of the result here does not make the problem simpler. Ascites is often relieved (but not cured) by the administration of one of the mercurial diuretics. When the diuretic is preceded by a few days of administration of one of the acid-base salts, such as ammonium chloride, the fluid output may be enhanced still further. This may result in fewer tapplings.

Surgical establishment of a circulation to bypass the liver may be considered. Theoretically this may be done by abrading the liver capsule or by suturing the omentum to the structures of the abdominal wall. Satisfactory results are problematic. For the liver cirrhosis itself high carbohydrate and high vitamin diets are advocated. If this is a true "Banti's syndrome," any treatment is only palliative.

BLOOD CLOTTING

To the Editor:—What is the significance of a blood plasma which coagulates even before the red cells? The plasma thickens and has the appearance of lipemia, although I do not think this is actually present. The patient has had Hodgkin's disease for eleven years.

M.D., Ohio.

ANSWER.—Since plasma coagulates and red cells do not, the inquirer probably wishes to know the significance of a pale clot as compared with the normal red clot in blood which has coagulated in a test tube. This phenomenon occurs whenever there is a rapid sedimentation of the erythrocytes, so that the red cells have time to separate out before coagulation starts. The clot is normally red merely because erythrocytes are trapped in the fibrin network which forms in the clotting process. If the red cells have sedimented before clotting begins, the supernatant plasma coagulates, giving rise to the so-called buffy coat. This phenomenon occurs in conditions associated with a rapid sedimentation rate; it is usually due to a high fibrinogen content of the blood plasma, although disturbances in the albumin-globulin ratio, or the appearance of abnormal globulins in the plasma, can also produce this effect occasionally.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 127, No. 6

CHICAGO, ILLINOIS
COPYRIGHT, 1945, BY AMERICAN MEDICAL ASSOCIATION

FEBRUARY 10, 1945

ANEMIA AND HYPOPROTEINEMIA COM- PLICATING SEVERE PROTRACTED PNEUMONIA

TREATMENT WITH PENICILLIN—

ROLE OF SPECIFIC SUPPORTIVE THERAPY IN
RECOVERY

S. HOWARD ARMSTRONG JR., M.D.

ALBERT C. ENGLAND JR., M.D.

CUTTING B. FAVOUR, M.D.

AND

I. HERBERT SCHEINBERG, M.D.

BOSTON

In writing of the symptomatic treatment of pneumonia in THE JOURNAL in 1921, Means and Barach¹ stated that "the hope for a true curative treatment for . . . pneumonia undoubtedly lies in the field of specific therapy. . . . it is our object while waiting for the . . . specific cure to consider . . . symptomatic treatment . . . in terms of morbid physiology."

The cases here reported are of significance not merely as cures of severe infections by the most recent and perhaps most powerful of specific antibacterial agents.² They are presented as instances wherein supportive therapy has appeared as important as the antibacterial in recovery from a clinical status which, although hitherto rarely seen in pneumonia, may occur with increasing frequency as specific agents permit prolonged survival in the face of infections otherwise rapidly fatal. Thus it remains relevant in the management of those pneumonias for which specific therapy is available "to consider symptomatic treatment in terms of morbid physiology."

REPORT OF CASES

CASE 1.—History.—A man aged 38, a painter, was admitted to the hospital for treatment of pneumonia and bacteremia due to pneumococcus type I which had failed to respond both to sulfonamide and to specific antiserum.

Following bronchopneumonia at 3, the patient was free of respiratory symptoms until the insidious development of a right lateral empyema at 30. After drainage (which yielded 50 cc. of pus containing *Staphylococcus aureus* and beta hemolytic streptococcus and disclosed a bronchopleural fistula), clinical recovery was rapid. The patient remained asymptomatic until the present illness.

Dr. Armstrong is Welch Fellow in Internal Medicine of the National Research Council.

From the Medical Clinic, Peter Bent Brigham Hospital, and the Department of Medicine, Harvard Medical School.

1. Means, J. H., and Barach, A. L.: The Symptomatic Treatment of Pneumonia, *J. A. M. A.* 77: 1217-1223 (Oct. 13) 1921.

2. The penicillin was provided by the Office of Scientific Research and Development from supplies assigned by the Committee on Medical Research for clinical investigation recommended by the Committee on Chemotherapeutics and Other Agents of the National Research Council.

Although this illness began with a chill followed by persistent malaise, painless nausea and vomiting and fever as high as 105 F., blood culture was negative and evidence of respiratory disease absent until the fifth day, when cough, rusty sputum containing type I pneumococci and signs of consolidation of the right upper and middle lobes appeared simultaneously with recovery of type I pneumococci from the blood stream.

Immediately oral sulfamerazine³ (an initial 4 Gm. and thereafter 1 Gm. every eight hours) was administered and retained despite nausea. The next day the blood sulfamerazine level was 8.9 mg. per hundred cubic centimeters.

Because persistent bacteremia, increasing dyspnea and weakness suggested a poor response to chemotherapy, on the seventh day 300,000 units of type I antipneumococcus rabbit serum was injected intramuscularly, without apparent improvement.

When admitted to the hospital on the eighth day of his illness, the patient's temperature was 104.5 F., pulse rate 120 and respiratory rate 45. He was dyspneic and dehydrated. His cyanosis could be improved by administration of oxygen by the B. L. B. mask.⁴ The trachea was deviated to the right. The respiratory excursion, nearly absent on the right, appeared generally limited by a "chicken breast" deformity of the thoracic cage.

Both physical and x-ray examinations disclosed spread of the pneumonia to the right lower lobe. In addition, physical signs suggested further spread to the left lower lobe, although the left lung was as yet clear to x-ray. Multiple thoracenteses, both at the site of the previous empyema and in the regions of the right interlobar fissures, yielded no pus.

The subsequent management, charted in part in chart 1, may best be described under two headings: (1) bacteriologic course and therapy and (2) respiratory and metabolic course and therapy.

Bacteriologic Course and Therapy.—Although admission blood culture was negative, direct sputum examination⁵ showed type I pneumococci in large numbers, and the Francis test⁶ was negative. The sulfamerazine level was 9.5 mg. per hundred cubic centimeters.

In addition to an immediate 2.5 Gm. of sodium sulfadiazine, the patient received 450,000 units of type I antipneumococcus rabbit serum intravenously and 4 Gm. of sulfadiazine by mouth in the next twenty-four hours. The drop in temperature and the reversal of the Francis test which followed were only transitory.

Subsequent rises of temperature to 103 F. and of respirations to 58 were shortly followed by the finding of consolidation in the left lower lobe. The Francis test again became negative; direct sputum examination continued to show many type I pneumococci, though blood culture remained sterile. The sulfonamide level was 12.2 mg. per hundred cubic centimeters.

3. Hall, W. H., and Spink, W. W.: Sulfamerazine: Clinical Evaluation in 115 Cases, *J. A. M. A.* 123: 125-131 (Sept. 18) 1943. Anderson, D. G.; Oliver, C. S., and Keefer, C. S.: A Clinical Evaluation of Sulfamerazine, *New England J. Med.* 230: 369-379 (March 30) 1944.

4. Boothby, W. M.; Lovelace, W. R., Jr., and Uihlein, A.: B. L. B. Oxygen Inhalation Apparatus: Improvements in Design and Efficiency by Studies on Oxygen Percentages in Alveolar Air, *Proc. Staff Meet., Mayo Clin.* 15: 194-206 (March 27) 1940.

5. Heffron, R.: Pneumonia, with Special Reference to Pneumococcus Lobar Pneumonia, New York, Oxford University Press, 1939, p. 620.

6. Francis, T., Jr.: The Value of the Skin Test with Type Specific Capsular Polysaccharide in the Serum Treatment of Type I Pneumococcus Pneumonia, *J. Exper. Med.* 57: 617-631 (April) 1933.

The patient had received a total of 750,000 units of antiserum.⁷ Therefore, on the tenth day of his disease, sulfonamide and serum were replaced by 240,000 units of penicillin⁸ per day by continuous intravenous drip. On the following morning and during the remainder of the course no pneumococci could be found on direct sputum examination. Blood cultures continued negative. Only as isolated colonies, twice in sputum cultures and once in a urine culture, did the organisms reappear. In each instance subsequent cultures were negative. On the thirteenth day the penicillin dosage was halved, on the seventeenth day the route was changed to the intramuscular, and on the twenty-second day the drug was stopped.

When cultured in para-aminobenzoic acid free⁹ tryptose broth a concentration of sulfadiazine of 10 mg. per hundred cubic centimeters failed to inhibit luxuriant growth of pneumococci derived from the patient's sputum, whereas concentrations of penicillin greater than 0.012 Oxford unit per cubic centimeter completely inhibited growth.¹⁰

Respiratory and Metabolic Course and Therapy.—However dramatic the apparent bacteriologic response, penicillin was followed by no immediate clinical response beyond the fact that gradual cessation of the previously progressive spread left the patient one functioning lobe. Cyanosis became deep even while the patient was at rest in an oxygen tent. The swinging

plasma and 3,330 cc. of whole blood. Uniform penicillin intake was attained by using blood and plasma as solvents. After partial correction of the patient's admission hypochloremia,¹¹ from 80 milliequivalents per liter to 89 milliequivalents per liter, sodium chloride intake was not permitted to exceed 10 Gm. a day, of which the greater part was intravenous. On this regimen chlorides were maintained between 90 and 96 milliequivalents per liter.¹²

During the first days of intensive blood and plasma therapy, hemoglobin and plasma proteins rose slowly from the initial low levels, and pulse, temperature and respirations remained high. Nevertheless the tendency to extreme dyspnea, cyanosis and pulmonary edema lessened. On the fourteenth day the first signs of clearing appeared over the right upper lobe and were confirmed by x-ray on the fifteenth day.

Toward the end of blood and plasma therapy, plasma proteins attained 6.3 Gm. per hundred cubic centimeters, hematocrit was 40 and the patient's condition appeared far less precarious. Within four days of the cessation of daily therapy, however, the hematocrit dropped to 35, the proteins to 5.6 Gm per hundred cubic centimeters. Pitting edema of the sacrum was first noted on the twenty-second day.

At this time, however, the slow process of clearing became manifest by a decreasing need for oxygen, the daily maxima of vital signs grew less (chart 1), and the patient began to eat. A period of severe distention, which failed to yield to the usual measures of poultice, rectal tube and pitressin, responded to additional vigorous neostigmine therapy, at one time attaining 25 mg. in five hours. In the ensuing twelve days, with increasing dietary protein intake, plasma proteins rose to 7.2 Gm. per hundred cubic centimeters. Simultaneously with the disappearance of clinical edema the patient lost 25 pounds (11.3 Kg.). His temperature remained normal after the thirty-second day; weight gain without edema began on the fortieth day.

When discharged on the forty-second day, muscular weakness and atrophy were striking. To x-ray examination, clearing of the chest was not yet complete; the sedimentation rate remained deviated at 53 mm. per hour. Examination of sputum and gastric washings for acid fast organisms, together with guinea pig injection, proved negative.

After five weeks at home, weight, muscle fullness and strength showed considerable improvement, and the sedimentation rate had reached a normal value of 10 mm per hour. The trachea remained deviated to the right; beyond evidence of right pleural thickening, the chest was clear to physical and x-ray examinations.

CASE 2.—A white man aged 85, whose first wife and 3 children had died of tuberculosis, gave no history of respiratory disease beyond a poorly remembered pneumonia fifty years previous to admission to the hospital for prostatectomy. For the past decade, gradually decreasing appetite abetted by poorly fitting false teeth had resulted in a steadily decreasing meat intake. In the year before admission, beyond a daily egg nog and an occasional small piece of pork, the patient's meals consisted principally of carbohydrates and tea.

Preoperative physical and x-ray examinations of the chest revealed moderate emphysema and a slightly enlarged heart. Fissures were present at the corners of the mouth. The

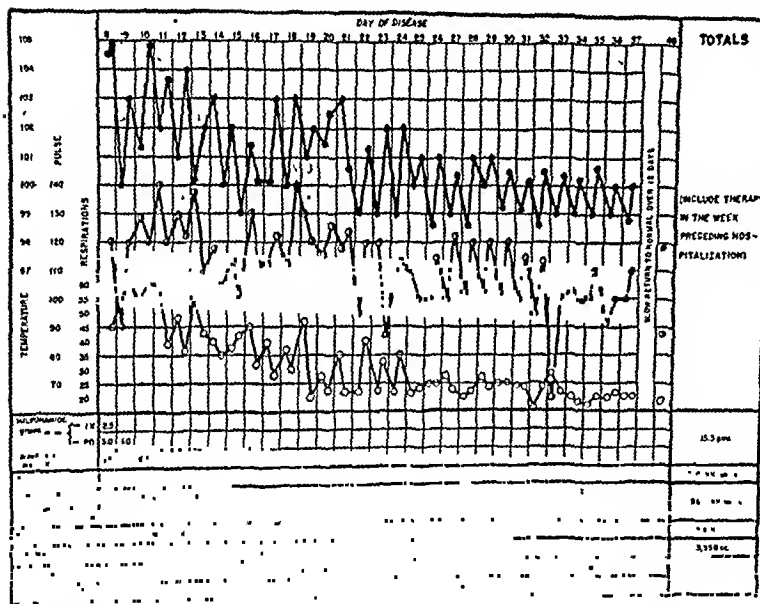


Chart 1 (case 1) — Partial clinical course, showing antibacterial, whole blood and plasma therapy

temperature attained 105 F. The ordinary maneuvers of nursing care and in 1 instance the inadvertent injection of about a liter of intravenous fluid in less than an hour precipitated attacks of extreme dyspnea and tachycardia (with rates exceeding 60 and 140 respectively) and the appearance of moist rales in the remaining lobe.

On the tenth day, during which the patient frequently appeared close to death, plasma proteins were found to be 4.5 Gm per hundred cubic centimeters and the hematocrit 30. Infusion of 250 cc. of plasma followed by 600 cc. of whole blood on the eleventh day was so closely paralleled by a fall in respiratory rate and by distinct relief of dyspnea (despite a simultaneous temperature rise) that between the eleventh and nineteenth days the patient was given a total of 3,550 cc. of

7. Dr. Geoffrey Edsall, acting director of the Massachusetts Department of Public Health Antitoxin and Vaccine Laboratory, cooperated by making available antiserum in this quantity.

8. Keefer, C. S.; Blake, F. G.; Marshall, E. K. Jr.; Lockwood, J. S., and Wood, W. B., Jr.: Penicillin in the Treatment of Infections, *J. A. M. A.* 122: 1217-1224 (Aug. 25) 1943. Danson, M. H., and Hobby, G. L.: The Clinical Use of Penicillin. Observations in 100 Cases, *ibid* 124: 611-622 (March 4) 1944.

9. Strauss, E.; Lowell, F. C., and Finland, M.: Observations on the Inhibition of Sulfonamide Action by Para-Aminobenzoic Acid, *J. Clin. Investigation* 20: 189-197 (March) 1941.

10. Rammelkamp, C. H.: A Method for Determining the Concentration of Penicillin in Body Fluids and Exudates, *Proc. Soc. Exper. Biol. & Med.* 51: 95-97 (Oct.) 1942.

11. Peabody, T. W.: Studies of the Inorganic Metabolism in Pneumonia, with Especial Reference to Calcium and Magnesium, *J. Exper. Med.* 17: 71-82 (Jan.) 1913. Haden, R. I.: The Clinical Significance of the Chloride Metabolism in Lobar Pneumonia, *Am. J. M. Sc.* 174: 744-750 (Dec.) 1927. Binger, C. A. L.; Christie, R. V.; Davis, J. S., Jr., and Hiller, H.: Blood Chlorides in Conditions Associated with Pneumonia, *J. Exper. Med.* 49: 603-614 (April) 1929. Sunderman, F. W.; Averin, J. H., and Camac, J. G.: Studies in Serum Electrolytes. I. Concentration of Electrolytes and Nonelectrolytes in the Serum During Lobar Pneumonia, *J. Clin. Investigation* 3: 37-64 (Oct.) 1926. Peters, J. P.; Bulger, H. A.; Eisenman, A. J., and Lee, C.: Total Acid Base Equilibrium of Plasma in Health and Disease: V. Miscellaneous Pathologic Conditions, *J. Biol. Chem.* 67: 219-235 (Jan.) 1926.

12. The patient's sodium intake exceeded that comprised by sodium chloride in that each liter of blood contains 3 Gm. and each liter of plasma 8 Gm. of sodium citrate as an anticoagulant.

tongue was red, geographic and smooth edged. Teeth were absent. The skin and gums were free of hemorrhage. A red scaly rash (said to be of six years' duration) overlay saphenous varicosities of the left lower leg. There was no edema. Both medial and lateral lobes of the prostate were enlarged. The remainder of the physical examination was irrelevant.

On the day after a well tolerated suprapubic prostatectomy the patient's condition appeared excellent. On the second postoperative day a cough productive of rusty purulent sputum and a rise of temperature to 103 F. (chart 2) were accompanied by the development of physical and x-ray evidence of consolidation in the right chest. Staphylococcus aureus was found on sputum culture.

Despite immediate administration of sufficient sulfadiazine to maintain blood levels between 7 and 12 mg. per hundred cubic centimeters the continued elevation of vital signs, the increasing dyspnea and the spread of the pneumonitis to the left chest led to replacement of sulfonamide by penicillin on the sixth postoperative day.

On an initial daily intravenous dosage of 240,000 units of penicillin, slow clearing of the pneumonia began. Although sputum decreased and no organisms were recovered from the blood stream, vital signs remained elevated. The patient was frequently irrational.

A pleural effusion, originally localized over the right upper lobe, was first tapped on the fourteenth postoperative day after a shift to the right base. Reaccumulation of fluid in the face of progressive clearing of the lung parenchyma necessitated a total of seven thoracenteses in the next ten days. Although no viable organisms were recovered by culture, because the first thoracentesis fluid showed a specific gravity of 1.020 and a few gram positive cocci on smear, a total of 120,000 units of penicillin was injected intrapleurally over five consecutive days.

On the second postoperative day, plasma proteins were found to be 4.2 Gm. per hundred cubic centimeters. In the ensuing ten days the administration of 2,750 cc. of plasma together with the whole blood subsequently detailed and 3,500 cc. of amino acids by mouth was followed by a rise of plasma proteins to only 4.8 Gm. per hundred cubic centimeters. During amino acid administration the patient's dietary intake, initially limited by anorexia to soup, milk, fruit juices and an occasional eggnog, became further curtailed by the development of nausea, vomiting and diarrhea such that on the fifteenth postoperative day all food by mouth was refused. Stool culture was negative. Amino acids (together with oral and parenteral preparations of the fat soluble vitamins, ascorbic acid and the B complex previously administered) were then stopped.

During the ensuing five days diarrhea subsided, appetite slowly returned and following the further administration of 1,500 cc. of plasma the plasma proteins were 5.4 Gm. per hundred cubic centimeters. By this time extensive clearing of the pneumonitis had occurred, fever was returning to normal limits and appetite permitted dietary intake to attain preoperative distribution and the resumption of supplementary vitamins. Four months following discharge, plasma proteins were 7.0 Gm. per hundred cubic centimeters.

A preoperative erythrocyte count of 3,500,000 and a hemoglobin of 9.5 Gm. per hundred cubic centimeters fell to 2,900,000 and 8.2 Gm. respectively by the second postoperative day. Administration of 900 cc. of whole blood in the next two days returned the red count and hemoglobin to preoperative levels. Eighteen hundred cc. of whole blood during the following week was required to maintain these levels (chart 2). The rise of the red count to 4,100,000 during the end of the clearing of the pneumonia was not accompanied by a change in hemoglobin. The discharge hemoglobin level of 9.5 Gm. per hundred cubic centimeters was identical with that on admission. The patient was put on 0.3 Gm. of ferrous gluconate three times a day. Four months after discharge the hemoglobin was 11.9 Gm. per hundred cubic centimeters.

COMMENT

Beyond the hemolytic anemia occasionally associated with sulfonamide administration,¹³ progressive anemia has not been widely recognized as a hazard in pneumonia.¹⁴ Likewise until the recent appearance of such values as 3.6 Gm. per hundred cubic centimeters reported in a prolonged sulfonamide treated pneumococcal infection complicated by bronchiolitis fibrosa obliterans,¹⁵ the plasma proteins in pneumonia have rarely been found lower than 90 per cent of the normal value. These previously reported changes are consistent in amount with the recently observed increases in plasma volume.¹⁶

The hypoproteinemia and anemia encountered at the onset of illness in case 2 may well have been related to the deficient diet over a prolonged period. To the disease itself can be attributed only a progressive drop in levels already low. The extent of involvement of pulmonary tissue by pneumonitis was not sufficient to lead to dangerous respiratory embarrassment, such that once progression was checked by intensive therapy.

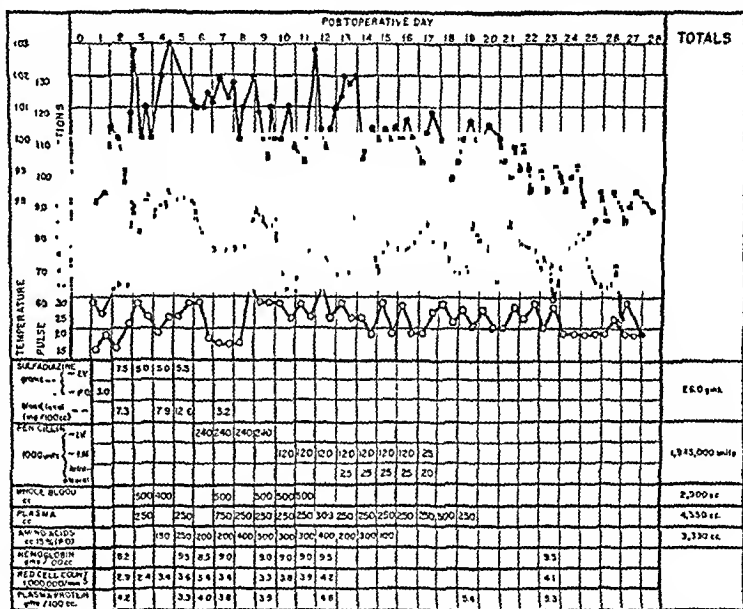


Chart 2 (case 2).—Partial clinical course, showing antibacterial whole blood, plasma and amino acid therapy.

impaired oxygen capacity and diminished plasma colloid osmotic pressure did not contribute significantly to the respiratory picture. Had measures to check progression been neglected, it is quite possible that further decrease in hemoglobin below 8.5 Gm. per hundred cubic centimeters and plasma proteins below 3.3 Gm. per hundred cubic centimeters would have led to a different outcome in this 85 year old man.

In contrast to case 2, the history and physical appearance on admission in case 1 gave no basis to suspect either hypoproteinemia or anemia antecedent to the onset of his illness. Moreover, although penicillin and serum had effected apparent bacteriologic arrest, on the tenth day of his illness pulmonary involvement

13. Boyer, N. H.: Acute Hemolytic Anemia Following Sulfadiazine: Report of a Case, *New England J. Med.* 228: 566-567 (May 6) 1943.

14. Hestron, Jp. 498-499.

15. Cabot Case 30031, *New England J. Med.* 230: 82-87 (Jan 20) 1944.

16. Rutenfranz, D. D.; Thomson, E. J.; Tolmachev, D. M.; Walker, W. H. and Floody, R. J.: Plasma Volume and "Extravascular Space" in *Pneumococcus Pneumonia*, *J. Clin. Investigation* (Jan 1) 1945.

was so extensive that he remained in desperate need of symptomatic treatment directed at morbid respiratory physiology.

That this is not an isolated experience in treating lobar pneumonia with penicillin emerges from Tillett's¹⁷ series of 46 cases wherein all three deaths followed bacteriologic improvement; in 1 "chronic pulmonary disease" was present; in another pulmonary edema developed.

It is therefore of interest to analyze in this case the interrelations of the chief factors underlying the deranged respiratory physiology and the methods available for their therapy:

1. *Therapy aimed at elimination of impediments to free movement of respiratory muscles:* In this case neither the thoracic deformity nor the anatomic sequelae of the previous empyema could be eliminated. However, had not moderate distention (of little danger to a patient with more functional lung tissue) responded promptly to vigorous treatment, progression of the elevation and limitation of motion of the left diaphragm alone might well have changed the outcome.

2. *Therapy of airway obstruction:* Because low viscosity helium-oxygen mixtures and bronchodilator-vasoconstrictor inhalation technics introduced by Barach and his co-workers¹⁸ have saved life when bronchial spasm or other obstruction has complicated pneumonia, these measures were held in readiness.

3. *Therapy directed toward attainment of high alveolar oxygen and maintenance of the remaining functional lung tissue in optimum condition for gas exchange:* Brief deprivations of oxygen demonstrated its indispensability many times during the critical period of minimal clearing. Administration by the mask designed by Barach and his associates¹⁹ for positive pressure expiration could probably have achieved better edema control²⁰ by opposition of controlled intra-alveolar pressures up to 50 mm. of water to fluid movement from capillaries to alveoli.

The attacks of edema in the single uninvolved lobe were of great danger. Moreover, the initial degree of hypoproteinemia indicated that plasma colloid osmotic pressure remaining to counteract edema due to any sudden increase in pulmonary intracapillary pressure was less than two thirds the normal value of approximately 300 mm. of water.²¹ The drop in plasma proteins following cessation of intensive plasma therapy suggests that had not the amount used (greater than the normal total circulating plasma proteins) been sufficient to counterbalance the progressive hypoproteinemia until clearing of pneumonia had begun, increasing pulmonary edema might have proved fatal.

4. *Therapy directed at maintenance of normal blood oxygen capacity:* Before clearing, anemia corresponded to a blood oxygen capacity approximately two thirds normal. Transfusions totaling almost two thirds the normal circulating red cell volume raised the hematocrit only from 30 to 40. The hematocrit drop following cessation of transfusions suggests that had not progressive anemia been thus counterbalanced the oxygen capacity of the blood reaching the remaining functional lung tissue might well have fallen low enough to negate the effects of other therapy.

Prevention of anemia and hypoproteinemia might well have made the course in this case less precarious. In that even anemia of slight degree may be of significance in widespread pneumonia, the obvious therapy is to anticipate development by transfusion.

The 40 Gm. of protein per day given in the week of plasma therapy provided this patient with 30 Gm. less than the protein requirement of a normal afebrile man whose total caloric intake is otherwise adequate.²² Nausea during the previous ten days of high fever kept both protein and caloric intake minimal and prevented administration by intubing tube of a nutritionally complete ration used with success by Olmsted and his associates²³ in typhoid. Thus the avoidance of hypoproteinemia in such severe pneumonia probably demands the use of plasma or amino acid mixtures²⁴ in massive amounts guided by plasma protein determinations well before the maximum spread has occurred.

SUMMARY

Severe and progressive anemia and hypoproteinemia developed in 2 cases of extensive and protracted bacterial pneumonia treated with penicillin. In 1 case anemia and hypoproteinemia of nutritional origin probably antedated the pneumonia; in the other no such presumption existed.

An increasing frequency of such cases is anticipated as powerful antibacterial drugs permit control of infections otherwise rapidly fatal.

In these patients enormous amounts of whole blood and plasma were required to counteract the progression of the anemia and hypoproteinemia. The fact that this therapy, together with nearly all known measures for maintenance of optimum gas exchange in remaining functional lung tissue, appeared necessary to maintain life for some time after apparent bacteriologic arrest of the infection suggests that, in pneumonias of this severity, development of anemia and hypoproteinemia should be anticipated by early use of whole blood and plasma together with adequate protein dietary intake.

22. Stare, F. J., and Thorn, G. W.: Some Medical Aspects of Protein Foods, *Am. J. Pub. Health* 33: 1444-1450 (Dec.) 1943.

23. Olmsted, W. H.; Harford, C. G., and Hampton, S. F.: Use of a Synthetic Diet for Food Allergy and Typhoid, *Arch. Int. Med.* 73: 341-348 (April) 1944.

24. Elman, R.: Parenteral Fluids and Foods in Gastrointestinal Disease, *Bull. New York Acad. Med.* 20: 220-236 (April) 1944.

17. Tillett, W. S.: The Treatment of Lobar Pneumonia and Pneumococcal Empyema with Penicillin, *Bull. New York Acad. Med.* 20: 142-178 (March) 1944.

18. Richards, D. W.; Barach, A. L., and Cromwell, H. A.: Use of Vaporized Bronchodilator Solutions in Asthma and Emphysema: Continuous Inhalation Method for Severe Asthmatic States, *Am. J. M. Sc.* 199: 1-10 (Jan.) 1944. Barach, A. L.: Use of Helium in Treatment of Asthma, *Ann. Int. Med.* 9: 1-10 (Jan.) 1944. Segal, M. S.: Inhalation Therapy in the Treatment of Serious Respiratory Disease, *New England J. Med.* 229: 235-241 (Aug. 5) 1943. The direct administration of bronchial dilators and vasoconstrictors is both simple and inexpensive and thus can be of value to physicians wherever situated. Helium-oxygen mixtures, on the contrary, require fairly elaborate apparatus and as yet are not available in as many hospitals as their value warrants.

19. Barach, A. L., and Molomut, N.: An Oxygen Mask Metered for Positive Pressure, *Ann. Int. Med.* 17: 820-822 (Nov.) 1942.

20. Barach, A. L.: Physiologically Directed Therapy in Pneumonia, *Ann. Int. Med.* 17: 812-819 (Nov.) 1942.

21. Scatchard, G.; Batchelder, A. C., and Brown, A.: Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation: VI. The Osmotic Pressure of Plasma and of Serum Albumin, *J. Clin. Investigation* 23: 458-464 (July) 1944.

Rise of Neurology in the Civil War.—Perhaps the outstanding medical event of the Civil War was the rise of the neurological profession in America. The Civil War is often regarded as parent, or at least nurse, to that infant profession. The four years of fratricidal strife also produced data on military psychiatry that might have proved valuable in future wars had their lessons not been so soon forgotten, only to be painfully relearned. Most interesting, perhaps, were the clinical observations of medical officers on such subjects as nostalgia and malingering among soldiers, together with notes on psychiatric screening in selective service.—*One Hundred Years of American Psychiatry*, New York, Columbia University Press, 1944.

THE USE AND ABUSE OF NASAL VASO-
CONSTRICTOR MEDICATIONS

BARNEY M. KULLY, M.D.

LOS ANGELES

No class of drugs is more widely distributed and used than are nasal vasoconstrictors. This is due to advertising of "patent" nostrums in press and radio, to exploitation of new compounds to the profession by pharmaceutical houses and to wide prescription of these drugs by physicians. Tabulation reveals that there are nationally distributed at least 240 nasal vasoconstrictor compounds in the form of drops, sprays, inhalants and ointments. It is timely to question whether the increased use of vasoconstrictors is justifiable and whether there are not disadvantages inherent in these drugs which demand a reappraisal of the indications for their use.

Since sympathomimetic compounds are the basis of nasal vasoconstrictor medication, this discussion is limited to their consideration. The first of these drugs to be isolated was the alkaloid ephedrine¹ in 1887. It was recovered from the herb *ma huang*, an old Chinese drug used empirically by Chinese physicians for over five thousand years. In 1895 Oliver and Schafer² demonstrated the active principle of the adrenal medulla, epinephrine. Since then these substances have been studied and their chemistry further clarified by Abel,³ Aldrich,⁴ Chen⁵ and others. Working independently, Stolz⁶ and Dakin⁷ in 1905 produced epinephrine synthetically. Five years later the studies of Barger and Dale⁸ led to the discovery of synephrin, neosynephrin and many allied compounds. Paredrine was introduced in 1913, propadrine in 1929, benzedrine (amphetamine) in 1930 and privityne in 1941. Several hundred additional compounds, allied chemically and therapeutically, have been synthesized and studied. Obviously, only a few have been employed in therapeutics.

PHARMACOLOGY

These drugs are adrenergic or sympathomimetic in action. They simulate the responses resulting from stimulation of the postganglionic nerves, but, as Goodman and Gilman⁹ point out, each drug differs in the details and intensity of the elicited responses. The cerebral stimulation of amphetamine, for example, is more pronounced than that of epinephrine. However, a discussion of the differences in systemic responses to these drugs is not within the scope of this paper.

The action of sympathomimetic drugs on the nasal mucosa is directed chiefly to the blood vessels, though the secretory function also is affected. Primarily the

effect on the blood vessels is vasoconstriction. The sub-epithelial capillaries and arterioles as well as the venous sinuses of the erectile tissues are constricted. Nasal secretion is diminished in contrast to the increased secretion that occurs when vasoconstriction results from chilling of the body surfaces.

If vasoconstriction is severe or prolonged, a reversal reaction ensues in the form of a secondary vasodilatation involving the deeper venous sinuses more than the sub-epithelial vasculature. This accounts for the fact that the mucosa remains blanched. The secondary reaction may be more evident and prolonged than the primary constriction.

Secondary vasodilatation is due either to an active vasodilator in the drug or to a fatigue of the constrictor mechanism. The active dilator of certain sympathomimetic drugs has been demonstrated in epinephrine in the so-called reversal phenomenon. If ergotamine or ergotoxin is injected into an animal in sufficient amounts, subsequent administration of epinephrine results not in vasoconstriction and increased blood pressure but in vasodilatation and lowered blood pressure. This reversal reaction has not yet been demonstrated in ephedrine or amphetamine, but Goodman and Gilman¹⁰ state that it is present in other sympathomimetic drugs.

The diphasic action of these drugs is premised on the experiments of Cannon,¹¹ who showed that stimulation of the sympathetic nerves results in the formation of a chemical mediator at the sympathoefferent junctions known as sympathin. This substance is chemically and pharmacologically related to epinephrine, the mother substance of the sympathomimetic amines. It may possess both excitatory and inhibitory components called sympathin E and sympathin I. Epinephrine combines both of these properties, the one constricting, the other dilating blood vessels. In epinephrine, the dilating factor has a more prolonged effect than the constricting factor. When constriction subsides, the inhibitory sympathin I remains unopposed to produce vasodilatation.

The fatigue factor as a cause for secondary vasodilatation may be based on exhaustion of the sympathin constricting factor or may be a physiologic reaction to overstimulation of the vasopressor mechanism. The clinical fact remains that persistent vasoconstriction results in secondary dilatation. When this occurs the mucosa becomes increasingly less responsive to subsequent applications of vasoconstrictor drugs.

FACTORS AFFECTING SECONDARY VASODILATATION

The degree of this after-dilatation is dependent chiefly on the type and amount of the sympathomimetic drug used and on the susceptibility of the individual vasomotor mechanism. To a lesser extent it is dependent on the pH of the drug, its vehicle, the presence of irritating compounds and the effect on the ciliary mechanism.

Sympathomimetic drugs vary in the intensity and the duration of the primary constricting effect and in the severity of their secondary dilating effect. Epinephrine and amphetamine are examples of drugs causing severe reactions, ephedrine and neosynephrin represent those producing a milder reaction. In my clinical experience none of the adrenergic drugs are free from this second-

Read before the Section on Laryngology, Otolaryngology and Rhinology, at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1. Nagai, N.: Ephedrin, Pharm. Ztschr. 32: 700, 1887.

2. Oliver, G., and Schafer, E. A.: The Physiological Effects of Extracts of the Suprarenal Capsules, J. Physiol. 18: 230-276, 1895.

3. Abel, J. J., and Geiling, E. M. K.: The Hormones of the Suprarenal Glands, in Stieglitz, J.: Chemistry in Medicine, New York, Chemical Foundation, Inc., 1928.

4. Aldrich, T. B.: Adrenalin, the Active Principle of the Suprarenal Gland, J. Am. Chem. Soc. 27: 1074, 1905.

5. Chen, K. K., and Schmidt, C. F.: The Action of Ephedrine, the Active Principle of the Chinese Drug Ma Huang, J. Pharmacol. & Exper. Therap. 24: 339-357, 1924.

6. Stolz, F.: Ueber Adrenalin und Alkylaminoacetobrenzcatechin, Ber. d. deutsch. chem. Gesellsch. 37: 4149-4153, 1904.

7. Dakin, H. D.: On the Physiological Activity of Substances and Indirectly Related to Adrenalin, Proc. Roy. Soc., London, s. B. 76: 491-497 and 498-503, 1905.

8. Barger, G., and Dale, H. H.: Chemical Structure and Sympathomimetic Action of Amines, J. Physiol. 41: 19-59, 1910.

9. Goodman, L., and Gilman, A.: The Pharmacological Basis of Therapeutics, New York, Macmillan Company, 1941, p. 396.

10. Goodman, and Gilman, p. 403.

11. Cannon, W. B., and Rosenblueth, A.: Studies on Condition of Activity in Endocrine Organs: Sympathin E and Sympathin I, Am. J. Physiol. 104: 557-574, 1933.

dary congesting effect. The statements of manufacturers that the newer vasoconstrictors cause no after-congestion are not in accordance with clinical findings. The amount of secondary congestion is proportionate to the intensity of the vasoconstriction, the frequency with which the drug is employed and the period of its use.

Individuals vary in their susceptibility to secondary reactions, but no one is completely immune. In many years of observation I have not seen a single patient who used any of these drugs to excess and remained free from the typical after-congestion.

Recent investigation shows that the pH is a factor in the effect on the nasal mucosa. Fabricant¹² states that the pH should approximate that of the nasal mucosa, 5.7. Other investigators report the reaction more nearly neutral. Significant variations in either direction are irritant and increase after-congestion. I have found, however, that even a neutral pH does not preclude irritant properties.

In recent years there has been a tendency to incorporate antiseptics with vasoconstrictors. This is particularly true of the sulfonamides, which have been added to almost every type of vasoconstrictor. Sulfathiazole has appeared in at least thirty such combinations recently. The rationale of the use of antiseptics is questionable. They are in contact with limited areas of the nasal mucosa and then for brief periods of five to fifteen minutes. As shown by Walsh and Cannon,¹³ they do not penetrate into the subepithelial tissues where the infecting organisms thrive. They increase irritation and reaction. In my experience sulfathiazole combinations have been prime offenders, causing severe after-congestion. These observations have found confirmation in the work of Futch,¹⁴ who demonstrated that 5 per cent sodium sulfathiazole solutions have a caustic effect on the nasal mucosa, destroying cilia and superficial columnar cells. Fletcher¹⁵ reported necrosis of the mucosa of the maxillary sinus following irrigation with 10 per cent sodium sulfathiazole solution. The alkalinity of the solution is not the major factor, for even in buffered combinations where the pH approaches neutral severe after-congestion occurs. I have been unable to substantiate the lavish claims of certain manufacturers that sulfathiazole vasoconstrictor compounds are valuable adjuvants in the treatment of acute rhinitis or of acute or chronic sinusitis.

The use of vasoconstrictors in the form of inhalants has become popular in recent years. Of these, amphetamine evokes the most vicious reaction because of its powerful pressor action and the ease of self administration. Reactions equally severe are caused by some of the "patent" inhalers. Adrenalin inhalant 1:100, though often affording spectacular relief to the asthmatic, is a powerful irritant to the nasal mucosa. When its use is necessary, the nostrils should be plugged with cotton to prevent the epinephrine saturated expired air from coming in contact with the nasal mucous membrane.

Vasoconstrictors in oily mediums are less irritant than those in aqueous solutions because the former are less efficient. Oils are not miscible with the overlying mucous sheet and by their inert weight interfere with

ciliary function. There are increasing reports¹⁶ of pneumonic complications following the intranasal instillation of oil, and in all probability many more cases occur than are reported. There is little justification for the continued use of oily mediums in the nose.

The effect on the ciliary mechanism of nasal vasoconstrictor medication has been studied by Proetz,¹⁷ Lierle and Moore¹⁸ and others and need not be here repeated. Disturbance in ciliary function and secondary vasodilatation are frequently coexistent, as proved by the action of epinephrine. Cocaine, on the other hand, is toxic to the ciliary mechanism but is less likely to produce secondary reaction. The danger of addiction, however, limits its use to surgery or to the acute emergency. The prescription of cocaine drops or sprays for use over a period of time is definitely unwise.

INDICATIONS FOR USE OF VASOCONSTRICTOR DRUGS

In nasal surgery, vasoconstrictor medication is a requisite. Bleeding is controlled, the field of vision widened and absorption of the anesthetic delayed. The use of a drastic vasoconstrictor, epinephrine, is justified, though postoperative swelling may be due more to the drug than to the surgery. Vasoconstriction is necessary in many manipulative procedures, such as sinus irrigations. In the displacement method of Proetz it is invaluable for therapy or visualization. Yet there has been observed damaging after-congestion with involvement of previously uninvolved sinuses, following too frequent displacement treatment or the use of drastic medication.

VASOCONSTRICTOR MEDICATION IN ACUTE RHINITIS

The value of vasoconstrictor therapy for acute rhinitis is questionable. The distress of the patient is temporarily relieved, justifying, in some instances, careful and minimal use of a mild decongestive drug. Unfortunately, such care is rarely exercised and the result is a disturbance in the nasal defense mechanism.

The nasal mucosa responds to infection, as do other body tissues, with swelling, augmented blood supply, increased exudation and diapedesis of cells. Shrinking the tissues with medication reverses this physiologic response. In no other tissue of the body is infection treated by diminishing the blood supply and shrinking the collateral edema. Such treatment lessens neither the severity nor the duration of the infection. On the contrary, the typical course of an acute rhinitis may be altered and prolonged. In the usual sequence the secretion, at first watery, becomes thick and mucopurulent between the second and third days. With this transition, nasal obstruction lessens. However, when the use of constrictive drugs results in after-congestion the mucosa assumes the gray edematous appearance of a vasomotor rhinitis. The obstruction persists and the secretion remains thin, often excoriating the nasal vestibula. Further medication gives temporary relief, soon to be followed by increased congestion, thus initiating a vicious circle. Persistence of watery secretion and nasal obstruction beyond the third day of an acute rhinitis signifies improper use of medication.

12. Fabricant, N. D.: *Nasal Medication*, Baltimore, Williams & Wilkins Company, 1942, p. 44.

13. Walsh, T. E., and Cannon, P. R.: *The Problem of Intranasal Medication*, *Ann. Otol., Rhin. & Laryng.* 47: 579-607 (Sept.) 1938.

14. Futch, C. E.; Rosenfeld, L. K., and Stewart, C. E., Jr.: *Caustic Effect of Sodium Sulfathiazole Solution on Nasal Mucous Membranes*, *J. A. M. A.* 119: 7-8 (May 2) 1942.

15. Fletcher, Russell: *Sodium Sulfathiazole: Its Caustic Action*, *California & West. Med.* 55: 94, 1941.

16. Walsh, T. E., and Cannon, P. R.: *Problem of Intranasal Medication*, *Ann. Otol., Rhin. & Laryng.* 47: 579-607, 1938. Bromer, R. S., and Wolman, I. J.: *Lipoid Pneumonia in Infants and Children*, *Radiology* 32: 17, 1939.

17. Proetz, Arthur W.: *Further Experiments in the Action of Drugs on the Nasal Mucosa*, *Arch. Otolaryng.* 30: 507-515 (Oct.) 1929.

18. Lierle, D. M., and Moore, P. M.: *Effects of Drugs on Ciliary Activity of Mucosa of Upper Respiratory Tract*, *Arch. Otolaryng.* 19: 55-65 (Jan.) 1934.

This misuse of medication prolongs the acute rhinitis and may cause sinus and otitic complications. A persistent vasodilatation with its edematous membrane may obstruct the sinus orifices and predispose to sinusitis. A study of my records shows that in a series of 640 patients with acute sinusitis 85 per cent had used some form of nasal vasoconstriction for three or more days prior to the onset of sinus symptoms. In each instance some degree of vasomotor rhinitis was noted. This does not prove that the drugs are causative, but the coincidence is suggestive. That they were a factor is indicated by the frequency with which the condition subsided spontaneously when medication was discontinued. I have seen instances of apparently intractable subacute sinusitis resolve when the mucous membranes were permitted to resume their normal functions.

It is not implied that nasal vasoconstrictors are contraindicated in the treatment of acute sinusitis. To shrink carefully the swollen mucosa about the orifice of an acutely infected sinus is a rational procedure. However, the margin between therapeutic shrinking and that of after-dilatation worse than the original condition is not a wide one and demands conservative judgment.

Otitic complications may follow the secondary reaction from vasoconstrictor drugs. Congestion about the eustachian orifices or the entrance of drops into the middle ear itself may be predisposing factors. In this connection Dintenfass¹⁹ reports a case in which, on myringotomy, mild protein silver previously instilled into the nose was found in the middle ear cavity. In a series of 64 cases of acute serous otitis media there was an associated use of nasal vasoconstrictor medication in 88 per cent. I have found the association of fluid in the middle ear and the secondary dilatation of nasal vasculature so frequently that I believe it to be significant. In 30 cases of acute suppurative otitis media, drops and sprays had been used in 14. This is a formidable ratio.

The use of shrinking medications for the relief of chronic obstruction due to hypertrophic rhinitis, septal deflections or nasal allergies has offered a fertile field for the exploitation of the vast gamut of vasoconstrictor drugs. Patients with chronic obstruction, especially those with allergic rhinitis, are rarely without their drops and inhalants. Many with vasomotor rhinitis who have received injections of allergens for years are sensitive chiefly to their nasal medication. The nasal symptoms and the need for injections would disappear if the medication was to be discontinued. The vasomotor rhinitis produced by drugs is identical with that due to allergy both in appearance and in the presence of eosinophils in the secretion. The following case report is extreme but instructive:

Mrs. M. B., aged 45, first seen in March 1940, had suffered from nasal obstruction, sneezing and watery discharge of many years' duration. Thirty years previously the diagnosis of allergic rhinitis was made and desensitization by injections initiated. For thirty years the patient had received one or more injections weekly. During this period nasal medications of all types had been regularly employed. The patient was persuaded to discontinue nasal medication and allergic injections for a four week trial period. At its termination she was free from nasal symptoms and has so remained.

It is difficult to induce patients to discontinue the use of nasal vasoconstrictors after long periods of self medication. It is a habit the breaking of which requires much persuasion and understanding on the part of the

physician. Many patients cannot sleep without their drops or inhalants, and these will for brief periods require sedation in the form of barbiturates or bromides.

Not all cases of vasomotor rhinitis are due to medication. Many are generally allergic and should be so treated. All, however, are aggravated by the use of shrinking drugs. The relief is temporary and the aftermath is increased obstruction. Persistent use of vasoconstrictors can produce progressively severe vasomotor rhinitis highly resistant to further applications of decongestant drugs. The end result may be a vasomotor paralysis.

The use of vasoconstrictor medication is not indicated in the treatment of obstruction due to adenoids, septal deviation, hypertrophic rhinitis, nasal polyps, neoplasms and so on. Such drugs are never curative and ultimately superimpose an additional congestion on the obstructive pathologic condition already present.

SUMMARY

1. A revaluation of the increased use of nasal vasoconstrictor medication is indicated.
2. The primary vasoconstricting effect of sympathomimetic drugs is usually followed by secondary vasodilatation.
3. This secondary vasodilatation is influenced mainly by the type and amount of the drug employed and the sensitivity of the individual vasomotor mechanism.
4. The addition of antiseptics, particularly sulfathiazole solutions, to vasoconstrictor drugs increases the irritant properties without compensatory therapeutic benefits.
5. Judicious use of vasoconstrictive medications is indicated in surgical, manipulative and displacement procedures and in some acute nasal infections, notably acute sinusitis.
6. The indiscriminate use of this medication in acute rhinitis lengthens the course of infection and increases the incidence of sinus and otitic complications.
7. Vasoconstrictor drugs may of themselves produce a vasomotor rhinitis indistinguishable from that due to allergy. Vasomotor rhinitis, allergic in origin, is made more severe by constricting medication.
8. The use of vasoconstrictor drugs in chronic obstructive pathologic conditions adds the factor of secondary congestion to the obstruction already present.

3875 Wilshire Boulevard.

ABSTRACT OF DISCUSSION

DR. LAWRENCE R. BOIES, Minneapolis: Any local treatment introduced into the nose in an acute rhinitis has little therapeutic value. Recent experience with the sulfonamide drugs incorporated into vasoconstricting drops or sprays, or the use of a sulfonamide in the powdered form, has not changed my ideas relative to the ineffectiveness of local therapy. I use mild vasoconstrictors in the acute phase of a rhinitis only to make the patient more comfortable and not with the idea that I am effecting a cure by this medication. In a subacute phase when the discharge has thickened, indicative of localization, there seems to be some indication that a conservative use of mild vasoconstrictors hastens the recovery. A certain amount of sinusitis invariably exists in an ordinary acute rhinitis. Local applications of tampons soaked with 15 per cent mild protein silver in equal parts of glycerin and water to the middle meatus or above the middle turbinate, or both, seems to be effective in the subacute stage of the infection. I do not use this treatment more often than every other day and rarely employ it for more than three or four times. Displacement therapy, as originated by Proetz, has been a useful treatment in the subacute phase of the infection. I avoid its use in the acute stage of the disease.

19. Dintenfass, Henry: *Otolaryngologic Suggestions in Pediatric Practice*, Pennsylvania M. J. 42: 226-230, 1938.

The average layman who medicates his nasal congestion because of the advice he has had over the radio is apt not to have an infection at all but rather a vasomotor state related to some dietary indiscretion, chilling of the body surface or excessive fatigue. These are transient states which often are over in three or four days. The victim often resorts to the use of nose drops and believes that the stronger vasoconstrictors containing aromatics and more recently the sulfonamides are the more effective. Too many medical men are still imbued with the idea that a stuffy nose or chronic headache must mean an independent disease of the nasal fossae or sinuses, or both.

DR. O. E. VAN ALYEA, Chicago: The present status of vasoconstricting nose drops is, in my opinion, as follows: 1. In the early stages of engorged tissues they are of little value except as a temporary expedient in lessening the discomfort of an acute head cold. 2. They are of no value in chronic sinusitis except as a vehicle in displacement therapy. 3. In subacute sinusitis they may prove helpful in removal of exudate from the sinuses. This is accomplished not only by the enlargement of the drainage space but through improvement in nasal breathing, which promotes the withdrawal of secretions by the negative pressure associated with inspiration. 4. Sulfonamide preparations are of no proved value intranasally and may be irritating and damaging to the ciliated mucosa. Although, in the main, agreeing with Dr. Kully, I find that in certain phases of his clinical observations our experiences have been somewhat at variance. I have not noted that complications of an acute nasal infection are more prevalent in those cases in which vasoconstrictors have been used, nor have I observed that the use of nasal decongestants prolonged to any appreciable extent the duration of a nasal infection. I have also seen cases of sinusitis and otitis which developed soon after the onset of a cold in which no medication whatever had been used. Dr. Kully rightly questions the feasibility of shrinking swollen membranes which are merely undergoing a normal physiologic response to disease. The same relief may be attained by an almost continuous baking under an infra-red lamp. This increases the swelling in the nose, which seems to be desirable. It also augments the blood supply, which steps up the physiologic response to the disease. The immediate comfort of the patient is due to the heated air, which as it is inhaled is no longer irritating but soothing to the nasal mucosa. Patients receiving this form of treatment feel no need of nose drops and none should be given. The principal users of nose drops in treatments of an acute rhinitis are those individuals who haven't the time or inclination to stay home and take care of themselves. There are often occasions when a patient with an acute cold must keep an important engagement. He needs something to lessen his discomfort, and this can be supplied most effectively in the form of an ephedrine-saline solution.

DR. BARNEY M. KULLY, Los Angeles: Most of us have been conditioned to the use of vasoconstrictors and we use them without due consideration. Our patients demand them for the temporary relief secured. When the after-congestion does occur, we ascribe it to the original infection for which the treatment was used and not to the medication. Many of the supposed one day cold cures with vasomotor compounds are not cures of colds but of temporary vasomotor conditions due to emotional upsets, dietary indiscretions and the like. In answer to Dr. Van Alyea, I did not advocate the complete cessation of the use of vasoconstrictor compounds. I stated that in acute colds, acute sinusitis and in the displacement treatment careful use was justifiable. These compounds must not be used beyond the point where a vasomotor rhinitis ensues. If a patient with an acute rhinitis has a grayish blue membrane, watery secretion and sneezing on the third, fourth or fifth day of the infection, one is justified in inquiring what vasoconstrictor compound is being used. My purpose was to call attention not only to the use of vasoconstrictors by rhinologists but to the vast use of these drugs by the public. The newspapers and radio advertise them, think it is up to us as rhinologists to educate the public that inherent in these drugs are harmful effects as well as benefits.

SENSITIVENESS OF MENINGOCOCCI
TO THE SULFONAMIDES

RAPID EFFECT OF ADMINISTRATION OF TWO GRAMS
OF SULFADIAZINE ON CARRIERS OF NEISSERIA
INTRACELLULARIS (MENINGOCOCCUS)

MAJOR ISADORE PILOT

MEDICAL CORPS, ARMY OF THE UNITED STATES

Among the gram negative bacteria, *Neisseria intracellularis* appears to be particularly sensitive to the sulfonamides. In active cases of epidemic meningitis the numerous organisms in the blood, spinal fluid and nasopharynx fortunately disappear rapidly as soon as therapy is instituted. In my experience the nasopharyngeal cultures usually are negative twenty-four hours after the administration of sulfadiazine either orally or intravenously.

The remarkable effect of sulfadiazine on *N. intracellularis* has been utilized by giving prophylactically two or more doses of 2 Gm. to contacts of active cases

TABLE 1.—Influence of 2 Gm. Dose of Sulfadiazine on Carriers of *Neisseria Intracellularis*

	Type I	Type II	Type II	Type IIa
Before administration.....	25%*	80%	90%	70%
2 hours after administration.....	25%	80%	90%	60%
6 hours after administration.....	4%	5%	15%	40%
12 hours after administration.....	3%	4%	2%	0
24 hours after administration.....	0	0	0	0
14 days after administration.....	0	0	0	0

* Percentage represents proportion of colonies on plate identified as *N. intracellularis*.

TABLE 2.—Free Sulfadiazine Levels After Administration of Single Dose of 2 Gm. Sulfadiazine in Milligrams per Hundred Cubic Centimeters of Blood

Carriers of.....	Type I	Type II	Type II	Type IIa
2 hours after.....	2.4	3.1	4.8	2.8
6 hours after.....	2.7	3.6	4.1	2.6
24 hours after.....	2.0	1.9	2.1	2.4
48 hours after.....	0.59	0.77	0.56	0

and to inductees beginning basic training. In the spring of 1943 the administration of 2 Gm. of sulfadiazine daily for two days to 700 men resulted in substantial reduction in the number of cases of meningococcic meningitis during an epidemic period.¹ The result had been a striking check of the spread of meningitis by the elimination of most of the carriers and a pronounced reduction in the incidence of meningococcic infections.

Lewis, Bolker and Klein² in February 1943 instituted mass prophylactic treatment to civilian and military personnel by the administration of 6 Gm. of sulfadiazine, two doses of 2 Gm. daily for two days and then two doses of 1 Gm. each on the third day. New cases of meningitis did not appear, and the carrier rate dropped to 0.14 per cent.

The percentage of carriers depends on the number and frequency of cultures made of the nose, throat and nasopharynx of individuals. In the literature the carrier rate is quite variable. For our purpose a single culture

From the Sixth Service Command Laboratory, Fort Sheridan, Ill.
1. Kuhns, D. M.; Nelson, C. T.; Feldman, H. A., and Kuhn, L. R.: The Prophylactic Value of Sulfadiazine in the Control of Meningococcic Meningitis, J. A. M. A. 123: 335-339 (Oct. 9) 1943.
2. Lewis, W. B.; Bolker, H., and Klein, D.: Mass Treatment with Sulfadiazine: Its Effect During an Outbreak of Meningococcus Meningitis, Mil. Surg. 93: 443-447 (Dec.) 1943.

of the nasopharynx was made on a group of soldiers and a group of civilians who were being inducted. The swabs were immediately inoculated by streaking fresh blood agar plates made up of brain-heart-infusion agar (Difco) with packed human blood cells added in 5 per cent proportion. The plates were incubated in a carbon dioxide jar for twenty-four to forty-eight hours. On this medium *N. intracellularis* grew well, forming smooth, moist, translucent colonies often in predominant numbers in the persistent carriers. The organisms were readily isolated and with antisera identified and classified as type I, II and IIa.

During the spring of 1944, from single nasopharyngeal swab cultures of 28 soldiers, 6 (21.4 per cent) positive cultures for *N. intracellularis* were obtained, 2 type I, 2 type II and 2 type IIa. By a similar method a single culture of civilian inductees taken immediately on arrival from the train yielded 5 positives of 25 (20 per cent), 2 type I, 1 type II and 2 type IIa. Apparently the civilian carrier rate is approximately the same as that of army personnel.

Four carriers among laboratory personnel were studied at frequent intervals to note the effect of the single oral 2 Gm. dose of sulfadiazine on the nasopharyngeal flora. Cultures were made immediately before administration and at two, six, twelve and twenty-four hour intervals after taking the drug. Blood sulfadiazine levels were made on the same persons two, six, twenty-four and forty-eight hours after the medication.

The changes in the incidence of *N. intracellularis* of the nasopharynx were noted quantitatively on the blood agar plates (table 1). In two hours no changes were observed, in six hours the number of colonies of *N. intracellularis* dropped considerably, in twelve hours the colonies were few and in twenty-four hours and subsequently they were absent.

Noteworthy was the effect of the sulfadiazine on the total flora of the nasopharynx. After six to twelve hours the decrease in number of colonies varied from 25 per cent to 50 per cent and remained depressed for twenty-four hours more. In three to five days the flora gradually returned to previous numbers except for *N. intracellularis*. Incidental pneumococci and the few hemolytic streptococci encountered were not influenced by the therapy.

No untoward effect or reactions were observed in the carriers as the result of the administration of the sulfadiazine.

The free sulfadiazine blood levels were determined in the 4 carriers at varying intervals (table 2). In the two and six hour samples the blood reached the highest level, varying from 2.8 to 4.8 mg., then declined in twenty-four hours and was almost free in forty-eight hours.

Two additional soldiers, carriers of type I, were subsequently treated by the 2 Gm. dose of sulfadiazine. One remained negative for a week, left the post and returned in thirty days when his cultures were again positive, but on typing the strain at this time belonged to type II. The other carrier was a heavy soldier weighing 220 pounds (100 Kg.). His blood level reached only 1.2 mg. The nasopharyngeal cultures, however, remained negative for eleven days after therapy and then again became positive for type I. A larger single dose of 4 Gm. of sulfadiazine was given. His blood level with this dose reached 5.1 mg. per hundred cubic centimeters and *N. intracellularis* again rapidly disappeared from the nasopharynx.

The present series is too small to justify the drawing of any conclusions. Further studies are necessary to determine the causes of the return of the carrier state. Inadequate dosage may be the most frequent factor when the single dose of 2 Gm. is given without regard to body weight. Under crowded conditions reinfection may reestablish quickly the carrier state by introducing other strains of *Neisseria*. However, local factors such as infections of the nose and accessory sinuses should be investigated in instances in which the same type or another type of *N. intracellularis* persists or recurs repeatedly.

SUMMARY

Carriers of *N. intracellularis* given a single dose of 2 Gm. of sulfadiazine rapidly become free of these organisms in nasopharyngeal cultures in twelve to twenty-four hours. The carrier state may return by the appearance of another type of *N. intracellularis* or of the same type if the dose is not adequate.

ASEPTIC NECROSIS OF THE EPIPHYSES AND SHORT BONES

ROENTGEN STUDIES

HOWARD P. DOUB, M.D.

DETROIT

Areas of necrosis involving the epiphyses and also the primary centers of ossification in certain of the short bones have been described by different observers. Unfortunately in most instances the lesion has come to be known by the name of the original observer. This has the disadvantage of giving no hint as to the underlying pathologic process and, further, of implying that in each instance we are dealing with an independent disease which bears no relation to the others in the series. These diseases have been known also under more general headings such as epiphysitis, osteochondritis and subchondral necrosis. It is now generally accepted that they all represent the same underlying pathologic process, although there is no general agreement as to the exact etiologic agent.

ETIOLOGY

Several theories have been advanced to explain the occurrence of areas of necrosis in the short bones and epiphyses. Endocrine dysfunction has been suggested. Infection has been demonstrated at the time of operation in a number of cases, but certainly this is not true in the vast majority, while clinical evidence of infection is minimal or, for the most part, nonexistent. A history of trauma is often obtained, and many authorities have leaned strongly toward this as the etiologic agent. There is, indeed, supporting evidence for the traumatic theory in certain cases. It is well known that aseptic necrosis of the capital epiphysis of the femur may ensue after closed reduction of a congenital dislocation of the hip and may closely follow the usual course of osteochondritis deformans juvenilis. In most examples of Osgood-Schlatter's disease of the tibial tuberosity there is a history of previous injury and, in Freiberg's necrosis of the metatarsal, trauma of some degree is associated with nearly every case. Those who advocate the traumatic theory are divided as to the pathologic changes

From the Department of Roentgenology, Henry Ford Hospital.
Read before the joint meeting of the Section on Orthopedic Surgery and the Section on Radiology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

involved. Many believe that a vascular occlusion is produced by the trauma, shutting off the blood supply to the involved epiphysis, with subsequent necrosis. Others attribute the necrosis to an embolic vascular occlusion.

PATHOLOGY

Because of the nature of the disease, which is usually mild and self limited, there is a scarcity of pathologic reports based on biopsy material. The general trend in recent years, however, is to consider these lesions under the heading of aseptic necrosis. This is largely due to the work of Axhausen, who believed that there is actual death of the ossifying nucleus of the developing epiphysis or short bone. This is followed by fragmentation, irregular absorption and finally replacement by means of so-called creeping substitution or recalcification.

Phemister¹ states that in children aseptic necrotic bone is nearly always completely replaced by new bone and that the replacement proceeds more rapidly than in adults. He adds that, as a result of pathologic studies, it has been learned that in necrosing lesions of the

frequently obtained, but not with sufficient constancy to establish it as an etiologic factor. The disease is usually unilateral but may involve both femurs.

Pain is often the first symptom and may be referred to the knee. Limping is a cardinal sign. There is always some limitation of motion, particularly of outward rotation of the femur. There may be muscular atrophy and a feeling of thickening of the periarticular structures. The symptoms may at first be inconstant and frequently disappear with simple rest in bed.

The roentgen picture is diagnostic when the lesion is well developed. It varies considerably in the different stages of the disease, thus affording an index as to the progress of the degenerative and reparative processes. The earliest stages are seen infrequently, but Waldenström² reports cases in which the only change present was a slight flattening of the capital epiphysis. This was shown to much better advantage in the lateral view, since it was the upper anterior portion of the bone which was necrotic. Occasionally also there is a very thin faintly distinguishable line concentric with the superior border of the epiphysis, indicating the chondro-

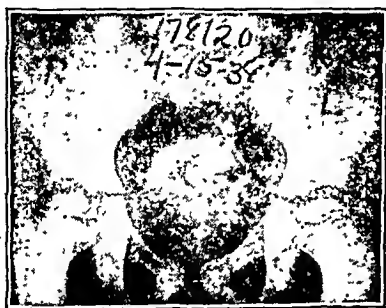


Fig. 1 (case 1).—Earliest stage of Legg-Perthes' disease. Slightly lessened density at outer margin of epiphysal line and along superior margin of capital epiphysis.



Fig. 2 (case 1).—Five months later. Considerable necrosis of epiphysis and metaphysis. Areas of increased density in capital epiphysis.



Fig. 3 (case 1).—Four months later. Flattening of epiphysis with irregular necrosis. Continued necrosis of the metaphysis.

epiphyses during the growth period the cartilage may show evidences of nutritional disturbance in places, but in large part it remains alive and may become thicker than normal, taking part in further epiphysal growth after the necrotic bone has been replaced.

CLINICAL SIGNS

The clinical signs of aseptic necrosis will not be described here in detail, but some reference will be made to them in the description of the disease as it manifests itself in various locations. Usually there is a history of mild or moderate pain, with limping if the involvement is in a weight bearing area. The patient is not acutely ill, and often there is no other complaint. The involved area is tender to palpation, and there may be restriction of normal motion. When the spine is involved, there is usually an accentuation of the dorsal curve.

OSTEOCHONDRITIS DEFORMANS JUVENILIS, OR LEGG-PERTHES DISEASE

Osteochondritis deformans juvenilis—so-called Legg-Perthes disease—affects the femoral head in children between the ages of 3 and 12 years. It is predominantly a disease of boys, and a history of trauma is

osseous junction, with subchondral bone resorption beneath it.

Gill,³ on the other hand, is of the opinion that the earliest changes occur in the metaphysis of the neck of the femur, consisting of areas of decalcification. These vary in number and size and tend to coalesce to form a broad band across the entire metaphysis. In our cases I have usually found a simultaneous involvement of the epiphysis and metaphysis. This often consists of an area of slightly lessened density near the outer margin of the capital epiphysis and the adjacent area of the metaphysis.

As the lesion progresses there is a concomitant necrosis of the capital epiphysis and the adjacent metaphysal area. Fragmentation often occurs, with patches of decalcification and sometimes isolated areas of increased density in the epiphysis. The epiphysal decalcification may proceed until only fragments of calcific material remain. In other cases the epiphysis is compressed and flattened but correspondingly widened in its lateral diameter. This stage of degeneration usually runs about eighteen months, but the period will vary somewhat according to the presence or absence of adequate therapy.

2. Waldenström, H.: The First Stages of Coxa Plana, *J. Bone & Joint Surg.* 20: 559-566 (July) 1938.

3. Gill, A. B.: Legg-Perthes Disease of the Hip: Its Early Roentgenographic Manifestations and Its Cyclical Course, *J. Bone & Joint Surg.* 22: 1013-1047 (Oct.) 1940.

1. Phemister, D. B.: Changes in Bones and Joints Resulting from Interruption of Circulation: General Consideration and Changes Resulting from Injuries, *Arch. Surg.* 41: 436-472 (Aug.) 1940.

In the stage of recovery there is slowly beginning recalcification, with disappearance of the fragmentation. The dense islets are no longer seen, and a more uniform new bone formation occurs in the usual area of the capital epiphysis. In many cases the metaphyseal lesions become recalcified earlier than those in the epiphysis. In cases with adequate treatment the stage of recovery usually extends over a period of two or three years.

The end result in most cases is a flattened head and widened neck of the femur. The acetabular cavity shows plastic changes, accommodating itself to the shape of the femoral head. In cases in which there has been a complete absence of weight bearing during the entire course of the disease, there may be an almost perfect restoration of the normal size and shape of the femoral head.

The etiology of Legg-Perthes disease has never been definitely established, but the general opinion is that it represents an instance of primary aseptic necrosis of bone. This is probably the result of a shutting off of the blood supply to the involved area, though the cause of the block is not definitely known. The fact

tion. The disease is characterized by weakening of the bond between the capital epiphysis and the metaphysis, with subsequent displacement of the epiphysis posteriorly and inferiorly.

The condition has been attributed to endocrine dysfunction, trauma, osteomalacia, late rickets and other conditions. No one of these, however, has been proved to be consistently present. It is possible that the rapid growth at this period together with obesity and the physical activity characteristic of this age group may play an etiologic role.

These patients often complain of intermittent pain and stiffness in the knee and thigh and have a noticeable limp. Fatigue is a prominent feature. There is limitation of internal rotation and abduction of the femur.

All motions except extension are limited. After slipping of the epiphysis has occurred, the symptoms and signs usually become more pronounced. Shortening may also be present. Symptoms may be manifest before any demonstrable displacement of the capital epiphysis has taken place, and it is in these cases that

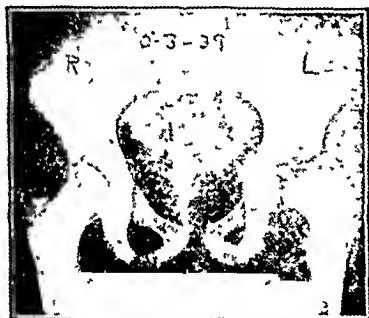


Fig. 4 (case 1).—Four months later. Necrosis with fragmentation of capital epiphysis. No reparative process visible.



Fig. 5 (case 1).—Seven and one half months later. Evidence of early recalcification in capital epiphysis indicative of reparative stage.



Fig. 6 (case 1).—Nine months later. Extensive recalcification of epiphysis, showing continued improvement.

that similar decalcification and fragmentation of the capital epiphysis sometimes develop after closed reduction of a congenital dislocation of the hip suggests that trauma to the blood supply may be the cause of this group of cases.

CASE 1.—J. L., a white boy aged 6 years, had been limping for the past month. He had had intermittent pain in the left leg and on one occasion was not able to walk home from school. In addition to the mild limp on the left side, examination showed limitation of complete abduction and also of internal and external rotation.

Roentgenograms revealed very early bone changes with irregular bone density in the head of the left femur, along the lateral margin of the capital epiphysis and also the metaphysis. These changes, together with the clinical findings, suggested early Legg-Perthes disease (figs. 1 and 2).

The boy was treated by means of a walking caliper and restriction of activity, since complete inactivity could not be enforced. The fragmentation and necrosis became rather extreme, but in slightly over two years there was pronounced recalcification of the head of the femur (figs. 3, 4, 5 and 6). There was a residual flattening of the capital epiphysis, with thickening of the neck of the femur (fig. 7).

SLIPPING OF THE UPPER FEMORAL EPIPHYSIS

Slipping of the upper femoral epiphysis occurs during early adolescence, usually between the ages of 10 and 16. There is no important difference in sex distribu-

a heavy responsibility rests on the roentgenologist to recognize what is sometimes spoken of as the preslipping stage.

In this early stage the roentgen changes consist of varying degrees of decalcification of the portion of the metaphysis adjacent to the epiphysal line, which thus appears widened and irregular. This is often seen to



Fig. 7 (case 1).—Eleven months later. Residual flattening of head of femur and thickening of femoral neck.

better advantage on films made with the leg abducted and externally rotated and is especially noticeable on comparison with the normal hip.

After slipping has taken place there is anteversion of the neck in relation to the epiphysis, followed by

upward displacement so that the epiphysis lies posteriorly and inferiorly. The true relations are again demonstrated to better advantage in the semilateral view. Callus may occasionally be seen, depending on the stage of the disease. When treatment has been successful, there is usually complete ossification of the epiphysal line. In cases in which structural deformities persist, arthritic changes are likely to be present in later life.



Fig. 8 (case 2).—The anteroposterior view shows the head and neck of the femur with very little evidence of abnormality. The lateral view indicates slight widening of the epiphysal line and beginning decalcification in the metaphysis.

CASE 2.—S. K., a white girl aged 12, was seen one week after the onset of pain in the right hip. The pain was noticed after walking some distance, but there was no history of injury. Examination disclosed slight limitation of internal rotation of the leg but no other abnormal changes. Roentgenograms were negative. Early slipping of the upper femoral epiphysis was suggested by the clinical examination.

The patient was put to bed for three weeks but continued to have discomfort in the hip. She had a low grade fever during this period. A slightly irregular calcification was now demonstrable in the metaphysis of the femur just back of the epiphysal line, but there was no displacement of the epiphysis (figs 8 and 9).

Under continued observation at frequent intervals the patient appeared to improve clinically but showed little change roentgenographically. Four months after the first observation, however, the symptoms flared up and roentgenograms revealed

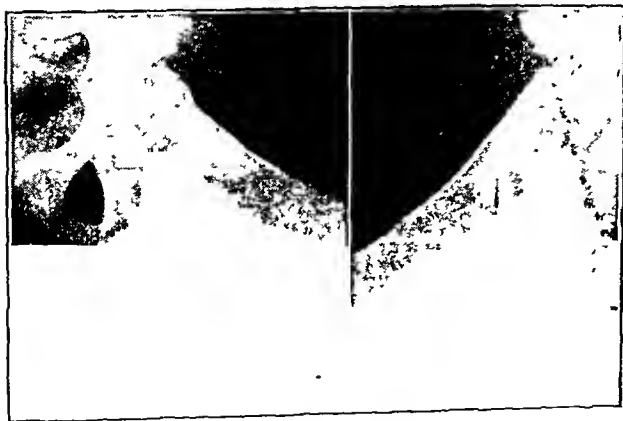


Fig. 9 (case 2).—Lateral views of both hips, showing early changes around the epiphysal line of the right femur.

definite evidence of slipping of the capital epiphysis. This was seen in the lateral view of the hip. The anteroposterior view showed very little change as compared with previous films (fig. 10).

After a short period of observation a Smith-Petersen nail was introduced through the neck of the femur and into the capital epiphysis, causing fixation with practically no displacement of the epiphysis from its normal position.

Fourteen months after the original examination the patient walked without any limp and had no discomfort in the hip. There was shortening of the leg of about half an inch. Roentgenograms showed the epiphysal line almost completely closed by bony union. The capital epiphysis was in good position (fig 11).

OSGOOD-SCHLATTER DISEASE

In Osgood-Schlatter disease the essential lesion is a necrosis of the epiphysis of the tibial tuberosity with a certain amount of disability. It is more common among boys than among girls. Most observers believe that trauma is the inciting if not the actual cause. Numerous instances of the disease have been reported in youths who have suffered multiple injuries—of more or less minor degree—while engaged in athletic contests and similar strenuous exercises. There are local pain, swelling, heat and definite tenderness to palpation. The findings, as a rule, are out of all proportion to the extent of the trauma. Indeed, there may be no history of injury. Motion of the knee is usually free, but there may be pain over the tibial tubercle when the knee is flexed.

Roentgenographically, thickening of the patellar ligament at its insertion is a valuable sign, and films should be made of such quality that soft tissue detail is well



Fig. 10 (case 2).—Anteroposterior and lateral views of hip, showing beginning displacement of the capital epiphysis—shown best in lateral projection.

visualized. Comparison films of the opposite knee are valuable. Sutro and Pomeranz⁴ state that this swelling of the patellar ligament may occasionally be demonstrated before there is any clinical evidence of its presence. The tibial tuberosity appears to extend downward in a tongue-like process from the anterior surface of the proximal epiphysis, but usually there are separate centers of ossification for the tuberosity. In the presence of necrosis, fragmentation and irregularity in outline and density are observed, as a rule. There may be small calcified particles adjacent to the anterior surface of the tuberosity, extending into the patellar ligament. As the disease progresses, the fragmentation and displacement of the calcified particles may become more prominent and widespread. In some cases the calcifying tuberosity appears to be separated from the underlying metaphysis by a wider cartilage zone than is normally present.

Considerable caution is needed in evaluating the bone changes in these cases, as a study of the knees of children in this age group will show a surprising variation in the development and calcification of the tibial tuberosity. It is necessary to examine the clinical findings and in many cases to demonstrate the confirmatory thickening of the patellar ligament.

⁴ Sutro, C. J., and Pomeranz, M. M.: Osgood Schlatter's Disease. *Arch. Surg.* 51:807-812 (Nov.) 1935.

Treatment usually consists in conservative immobilization of the knee joint with relaxation of the patellar ligament. There may be a residual thickening and prominence of the tibial tuberosity.

CASE 3—T. G., a boy aged 13 years, had experienced pain in both legs just below the knees during the past month. This was accentuated by exercise, such as playing football, and definitely relieved by rest. Examination showed swelling and tenderness on palpation over both tibial tubercles but of slightly greater degree on the left. There was no redness or other sign of an inflammatory process.

Roentgenographic studies revealed thickening of the soft tissues over the epiphyses of both tibial tubercles with irregularly outlined epiphyses, and loose calcified bodies in the soft tissues over the tuberosity on the left side (fig 12 A).

Under a protective regimen the symptoms and signs regressed (fig. 12 B) and the patient had no further trouble until he began playing football seven months later, when symptoms recurred over the right knee. After two months' rest the symptoms again disappeared.

KÖHLER'S DISEASE OF THE TARSAL SCAPHOID

In Kohler's disease there is a necrosis or change in the ossification of the tarsal scaphoid. The condition occurs between the ages of 3 and 10 years, with a peak incidence at 5 and 6 years, and is more common in boys.



Fig 11 (case 2).—Anteroposterior and lateral views of hip ten months after nailing. Epiphysis shows very little displacement, and epiphysis is closing.

It was first described by Kohler in 1908. Symptoms may be slight or even nonexistent. In some cases attention is drawn to the condition by a swelling over the dorsum of the foot associated with local pain or tenderness. Occasionally it may be discovered incidentally during routine examination of the foot.

In these cases the ossification nucleus of the scaphoid is usually smaller than normal and much more dense than the other tarsal bones. It may retain its usual shape or be only slightly irregular in contour. The cartilage around it may be of normal thickness, so that there is no approximation of the cuneiform bones and the astragalus. The other tarsal bones usually present a normal appearance. Cases which have been followed show evidence of restoration to normal size and shape or only slight irregularity in outline and density after several years. A number of instances of bilateral involvement have been reported.

CASE 4.—T. G., a white boy aged 3 years, complained of pain in the foot. This had begun five months previous to admission and was attributed at that time to the wearing of tight shoes. Pain and associated swelling had persisted to such a degree that the child was unable to bear his weight on the foot. The swelling, however, had subsided gradually. The general health was good.

Examination disclosed slight increase in local heat together with moderate redness over the scaphoid area. There was some

swelling in this region but very little tenderness on palpation. Active motion of the foot was free and relatively painless.

Roentgenograms revealed arrest in development of the tarsal scaphoid with a considerable increase in density of the bone and swelling of the soft tissues over this area (fig. 13).

Whitman foot plates were applied, and within a short time the swelling regressed and the pain and tenderness disappeared.

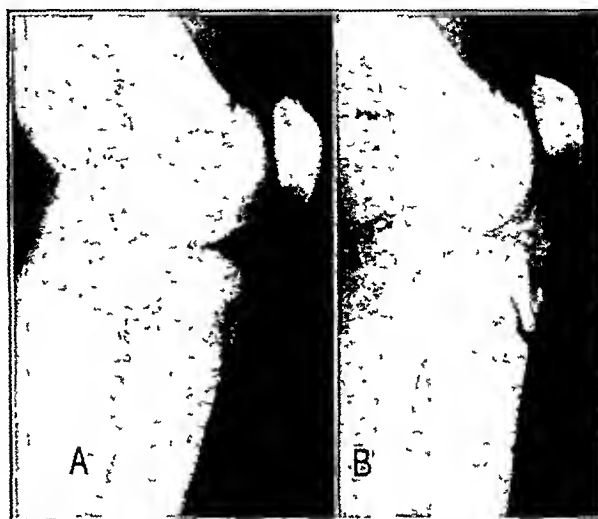


Fig. 12 (case 3)—A, Osgood Schlatter disease of the tibial tubercle. It shows thickening of the patellar ligament and calcified areas in the soft tissues. B, in three months the swelling of the soft tissues showed regression and the calcification increased.

FREIBERG'S INFRACTION OF THE SECOND METATARSAL

The condition originally reported by Freiberg in 1913 as infraction of the second metatarsal was later described independently by Kohler and is sometimes known by his



Fig 13 (case 4).—Köhler's tarsal scaphoiditis. Arrested development of tarsal scaphoid with increased density. Soft tissue swelling around this area.

name. It is a disease occurring most frequently in girls between 10 and 15 years of age but may be seen in slightly older persons. The chief clinical symptom is pain over the head of the second metatarsal, especially

on pressure. In some cases there is a definite history of injury. There may be soft tissue swelling over the area. The heads of other metatarsals may be involved, but this occurs only rarely. The disease may be due to the increased length of the second toe, which renders it more liable to injury from ill fitting shoes.



Fig. 14 (case 5)—Freiberg's infraction of the head of the second metatarsal. It shows typical necrosis of the head of the metatarsal, together with a similar involvement of the proximal phalanx of this toe.

The roentgenographic appearances are characteristic and similar to those of aseptic necrosis in other areas. There are flattening and widening of the head of the second metatarsal with shortening. The articular surface is irregular in contour and shows increased density. The distal half of the shaft is thickened, with loss of the metatarsal neck. The cortex may be thickened, as well as the circumference of the shaft. The proximal portion of the phalanx is flattened and usually shows broadening. The articulation is broader than usual and may be strikingly irregular. Calcified loose bodies are sometimes demonstrable in the joint capsule.

A number of cases have been surgically explored, with subsequent pathologic study. In some cases there was a generalized thickening of the synovial membrane with no other macroscopic changes. In more advanced cases there were areas of subchondral necrosis of bone with necrotic lamellar spongiosa and irregular condensation. The necrotic area was separated from healthy spongiosa by a dense zone of connective tissue containing scattered areas of new bone formation.

CASE 5—G. P., a white man aged 20, complained of pain and tenderness of the second toe. There was no history of trauma. The condition had its onset two years previously

with swelling and pain over the area of the metatarsophalangeal joint. These symptoms were acute for one month, after which they partially subsided. Three months previous to examination they again became acute, and, while the patient was able to walk, the joint remained painful and tender. Examination revealed an area of swelling about the size of a quarter over the second metatarsophalangeal articulation. The skin over the area appeared normal. There was tenderness on palpation.

Roentgenograms showed deformity of the second metatarsophalangeal joint with increased widening and density of the second metatarsal and widening and deformity of the head of this bone. There was a similar involvement of the proximal end of the proximal phalanx of this toe (fig. 14).

KYPHOSIS DORSALIS JUVENILIS

Juvenile dorsal kyphosis was first described by Scheuermann⁵ in 1920 and is commonly designated as epiphysitis or osteochondritis of the spine. It occurs at about the age of puberty with a peak incidence at 15 to 16 years. The area most frequently involved is the middorsal spine, and there is often an associated rounded kyphosis in that area. Pain in the back, tenderness to pressure and fatigue are characteristic features. The pain is aggravated by the erect posture and relieved by bed rest.

On the roentgenogram the epiphyses appear of irregular density and may show fragmentation. They are fuzzy and indistinct in outline. There may be an increase in the clear space between the epiphysis and the vertebral body. The latter shows irregular calcification along its superior and inferior surfaces and also becomes wedged anteriorly. These changes indicate



Fig. 15 (case 6)—Dorsal kyphosis with irregularity of the vertebral margins and narrowing of the disks in a case of kyphosis dorsalis juvenilis.

disturbance in epiphysial growth with interruption of the normal ossification.

When proper therapeutic measures are instituted there is a disappearance of the fuzzy outlines and an

⁵ Scheuermann, H. Kyphosis Dorsalis Juvenilis, *Ugeskr. f. Læger* 5: 569-574, 1920.

increase in calcification of both the epiphyses and the vertebrae. In cases of minimal involvement there will be little residual deformity. Where the anatomic changes have been well defined there will be residual kyphosis of noticeable degree, and wedging of the vertebrae with irregularity along the margins will persist. The disks between the involved vertebrae also show narrowing.

Beadle,⁶ in his monograph on the intervertebral disks, points out that in the specimens collected by Schmorl many of these adolescent kyphoses were associated with prolapses of the disks in the nucleus region in the lower dorsal and lumbar areas. These prolapses tend to involve symmetrical areas in adjacent vertebrae occurring in a straight row one above the other and presenting a characteristic appearance. They are not similar to the prolapses seen in the adult spine, where the distribution is uneven. There is an associated kyphosis of varying degree in the lower dorsal area, with a corresponding lumbar lordosis. Beadle attributes the condition to a developmental error with defects in the cartilage plates, which are likely to give way under excessive strain or exercise. These defects allow passage of the nuclear material into the vertebral spongiosa. If the excessive exercise is not stopped at this point the process goes on to its final phase, a definite growth disturbance.

The different points of view as manifested first by Scheuermann, who believed that these cases represent osteochondritis analogous to similar lesions in other parts of the body, and later by Schmorl and Beadle, who believed that these lesions are secondary to prolapses of the disks in the nucleus region, have led to some discussion and controversy. I feel that lesions of both types may occur in different patients, depending on anatomic defects and other factors.

CASE 6.—H. S., a white girl aged 15 years, first seen in 1936, stated at that time that she had struck her back in a fall. She denied any previous back complaint. Examination showed that the patient was overweight, with exaggeration of the dorsal curve and a slight kyphosis in the cervicodorsal area. She complained of pain on palpation and percussion over the lower cervical and middorsal areas. Flexion of the spine was limited, and there was moderate muscle spasm.

Roentgenograms of the spine showed a definite rounded dorsal kyphosis with irregularity in contour involving the vertebral bodies in the mid and lower dorsal areas and the lumbar area. There was also narrowing of the disks between most of these vertebrae. The vertebral epiphyses were ragged and irregular in appearance. Several of the vertebrae showed evidence of Schmorl's nodes.

Examination two years later showed the same rounded dorsal curve. The epiphyses were partly calcified, and the vertebral margins showed a residual irregularity. Some of the intervertebral disks were narrowed (fig. 15).

COMMENT

In this discussion I have attempted to correlate the findings in aseptic necrosis as it involves the developing epiphyses and the primary centers of ossification in certain of the short bones. Short descriptions are given of the salient points of some of the more commonly observed lesions. As the process may involve any of

the developing epiphyses, only brief mention of the various areas has been possible.

The etiology of aseptic necrosis is a fascinating problem, but no general agreement as to this phase of the subject has been reached. That some form of trauma with secondary vascular occlusion of the involved area is responsible is held by many. Embolic occlusion has also been mentioned as a cause, and endocrine dysfunction has been invoked by others.

The pathologic process probably involves actual death of the ossifying nucleus, followed by fragmentation, irregular absorption of the involved bone and replacement by so-called creeping substitution or recalcification. This is the same process that has been observed in adults, in whom aseptic necrosis is being increasingly recognized. The cartilage is in most instances not involved in the process. In general, the clinical findings are not prominent or acute and there may be no complaint except for slight pain and limping. There may be restriction of motion of the involved part.

The roentgen examination has been of the greatest aid in the study of the changing pathologic picture in these cases, as by this method it is possible to demon-

Aseptic Necrosis (Partial List)

Primary Centers	Secondary Centers
Vertebral body (Calvé 1923)	Vertebral epiphysis (Scheuermann 1921) Sternal end of clavicle (Friedrich 1924) Head of humerus (Hass 1921)
Carpal scaphoid (Preiser)	Capitulum of humerus (Panner 1927) Head of radius (Brailsford 1933)
Semilunar, adult (Klenböck 1910)	Ulna, distal (Burns 1931) Head of metacarpals (Mauelaire 1927) Mac crest (Buchman 1925)
Patella (Köhler 1908)	Pubic symphysis (Van Neck 1924) Ischiopubic junction (Oldberg 1924)
Astragalus (Mouchet 1928)	Head of femur (Legg 1910) Trochanter of femur (Monde Felix 1922)
Tarsal scaphoid (Köhler 1908)	Patella (Stading-Larsen 1921) Head of tibia (Ritter 1929)
Medial cuneiform (Benschke 1924)	Tubercle of tibia (Osgood, Schlatter 1904) Os cubiti (Sever 1912) Metatarsals (Freiberg 1914)

strate the early evidences of decalcification, the subsequent necrosis and finally the signs of repair. In the earliest stages there are usually small areas of lessened density which under observation increase in extent and intensity. The epiphysis becomes fissured and fragmented and fuzzy in outline, with a ragged appearance. Areas of dense necrotic bone are visualized. The process may involve both the epiphysis and the metaphysis, and the former may be compressed and flattened. In the stage of regeneration or recovery there is a gradual loss of the osteoporosis with absorption of the dense necrotic bone in the epiphysis. This is followed by slowly advancing replacement of the necrotic bone by recalcification, which proceeds until there is complete bony restitution.

The amount of deformity of the restored bony contour will depend on many factors, including the stage at which it was first recognized and adequate treatment was applied. The duration of treatment also plays a role. Some patients refuse to allow the involved part adequate rest after the symptoms have disappeared. It should be recognized that there is a definite lag in bony replacement as compared with the disappearance of the symptoms. Many patients have a definite sense of well being at a time when the roentgenograms still show necrosis and very little evidence of regeneration.

2799 West Grand Boulevard.

6. Beadle, O. A.: The Intervertebral Disks—Observations on Their Normal and Morbid Anatomy in Relation to Spinal Deformities, Medical Research Council, Special Report Series, no. 161, London, His Majesty's Stationery Office, 1931.

THE CLINICAL DIAGNOSIS, TREATMENT AND PROGNOSIS OF EPIPHYSIAL DISTURBANCES IN CHILDHOOD

WALLACE H. COLE, M.D.

ST. PAUL

The etiology of epiphysial lesions is not clearly understood, and it is impossible with our present knowledge to classify these disturbances except on an anatomic basis, although there are some who feel that an endocrine dysfunction underlies most, if not all, of the group under consideration. However, a discussion of the etiology does not come within the scope of this paper. The name osteochondrosis has been applied, in the Standard Nomenclature of Disease, to most of the conditions involving growth centers the etiology of which is obscure or at least on which there is no unified opinion as to the cause, and our older and more familiar terms must be sidetracked for purposes of classification and filing if not otherwise.

The epiphyses throughout the body have, of course, a very regular and constant anatomic position, and their ossification is also constant for any particular location. Some, a very few, show centers already present at birth, while others may remain completely cartilaginous until puberty, and it is an understanding of these different periods of development which forms a basis for the recognition of any pathologic condition which may supervene.

In reviewing the cases with epiphysial disturbances from a rather large children's service, followed over a number of years, it was evident that, aside from lesions of the hip, knee and spine, these disturbances are fairly rare and relatively unimportant. The more common conditions will therefore be discussed first, but the radiographic changes and findings, so vitally important in making a definite diagnosis, will not be touched on as Dr. Doub has covered this part of the subject.

So much has been written about osteochondrosis of the head of the femur (Legg-Perthes disease) that in late years, in my experience, it has been rare to see a case which has not been diagnosed already by the family physician, although many cases on account of the mildness of the symptoms are allowed to go for many months by the parents before medical advice is sought. There have been more cases with infectious conditions, including tuberculosis, which have been diagnosed as Legg-Perthes disease than the reverse. Some cases certainly are never seen by a doctor and some may present such minor symptoms that when in later life a deformed hip is found because of developing disability no history of earlier trouble can be obtained. This has been seen by me in recruits when active physical training has brought out an insufficiency of the hip joint never before suspected. It is this insidiousness of onset which is largely responsible for the delay in proper treatment in many cases, and not neglect on the part of the parents or the physician.

Most cases can be diagnosed clinically with a fair degree of certainty, but the roentgenogram must decide in the end, if no mistakes are to be made. The condition is found predominantly in boys, and an examination of many reports shows that probably around 85 per cent of all patients are males. They are seen as young as 3 years of age and up into the teens, although an onset after 12 years is very rare. The

first symptom in a typical case is usually a limp which develops as the day goes on but is absent after and on first getting up in the morning. This limp soon accompanied by tiring and discomfort, the latter of which may become definite pain, with reference to the region of the knee, at times. The symptoms, relieved by rest at first, gradually become more persistent and constant, and definite disability of the results. Usually, if the parents wait until this time before seeking medical aid, there has already developed some deformity of the upper end of the femur. Examination shows, even early in the disease, that there is limitation of the rotations, especially internally, and abduction. Flexion usually remains free, but there may be a slight limitation of hyperextension of the hip, discernible if the test is made with the patient lying in prone position. Forcing all motions may cause discomfort or even pain. Later findings may be atrophy of the thigh muscles and glutei and some shortening. As already mentioned, the roentgenogram will be the final evidence needed to insure the diagnosis.

The orthopedic treatment of osteochondrosis of the hip, if this term must be used, is based on the fact that the head of the femur is softened by the underlying pathologic condition and will become deformed if pressure is placed on it. Consequently, non-weight bearing is the first requirement of therapy. How this can be applied depends on the circumstances under which the patient is seen and the social and economic background. The ideal is to place the child in bed with light weight and pulley traction attached to the leg of the involved side so that absolutely no weight bearing is possible, and to continue this for months, or in some cases years, until the roentgenogram shows that healing has taken place. If the patient can be controlled properly the traction can be dispensed with toward the end and with some children may not be necessary from the beginning. I have found that in the later stages free motion of the hip and leg, with the body held firmly on a Bradford frame, seems to help prevent atrophy and apparently does no harm. As it is impossible to keep all children with this lesion in bed for the length of time needed to allow healing to take place, some substitutes must be found for the ideal. The ring-caliper splint has been found to be satisfactory in this regard, and weight bearing through the hip can certainly be cut to a minimum if the splint is well fitted. Results with a large number of cases treated in the outpatient department by this method have been very satisfactory. In the more acute cases the brace, instead of being fastened to a ferrule in the shoe, is extended to a foot piece or patten below the shoe, with the shoe on the normal side built up to equalize the length of the two sides. Crutches can be used to relieve some of the brace pressure on the tuberosity of the ischium, if desired. Complete fixation of a hip joint in plaster of paris is never indicated, unless for purposes of transportation.

The general treatment should consist of those measures necessary to keep the child in good health and the use of thyroid. It has been claimed that with early recognition of this condition adequate thyroid therapy will eliminate the necessity for protective treatment, but even if thyroid will hurry the healing process, and my limited experience makes me feel that it does, it is certain that non-weight bearing is essential also until the bone is firm enough to assume its full function.

The protection, of whatever kind, must be continued until the roentgenogram shows that the cycle of the

lesion has been completed and healing has taken place, and then gradual resumption of full activity can be allowed. There can be little doubt that a practically normal hip will result if the case has been seen early and proper protection has been used. Certainly further deformity of the head of the femur can be prevented, but it is questionable whether that deformity which is already present when the patient is first seen can be overcome. Those who show flattening and broadening of the capital epiphysis at the first examination will probably always have some distortion of the hip and a disability which, although negligible or absent at first, will become greater as the age increases. Even with the apparently perfect recoveries there will be a tendency toward the development of a degenerative arthritis in later life.

Slipping of the proximal femoral epiphysis is a lesion which will sometimes be confused clinically with osteochondrosis of the hip, but it presents enough characteristic symptoms and findings to differentiate it definitely from any other lesion. Here again so much has been written on the subject that only the most important factors need be reviewed. The condition occurs about twice as often in boys as in girls, and in close to 70 per cent of the cases the general body build is that which is frequently described as the Fröhlich type of individual, that is, the somewhat overgrown child with excessive subcutaneous fat, flabby muscles and genital hypoplasia. The smaller percentage of patients are apparently physically normal children or the tall and thin, rapidly growing type. The onset is usually very gradual with intermittent tiredness, discomfort and limp, which soon become more constant and are accompanied by stiffness of the hip joint. There may be pain in the knee early as with any pathologic condition of the hip joint.

Examination shows the extremity in some external rotation with a definite limitation of internal rotation and abduction. When the thigh is flexed on the trunk, it tends to go into external rotation and abduction, but hyperextension may be even freer than on the normal side. Palpation frequently reveals some apparent thickening over the joint, anteriorly. In all but the earliest cases there will be some shortening of the extremity, with elevation of the trochanter above Nélaton's line. All of these symptoms and clinical findings are due to a gradual slipping and rotation of the femoral head downward and backward on the neck. Following some injury or sudden motion, immediate and complete disability of the hip may occur as the result of acute slipping of the epiphysis from the neck, but the history will usually show that the prodromal symptoms were present long before.

The x-ray appearances in the usual case of slipping femoral epiphysis are typical of the condition in all stages, and even in the earliest case the films will confirm the clinical diagnosis if they are well taken and a lateral view is included. The lateral view is absolutely essential if mistakes are not to be made.

The prognosis for a normal or near normal hip is good only if the case is seen and diagnosed in the early stages with no delay in instituting proper treatment. Older cases all show some disability, sometimes of a pronounced degree.

Treatment, in addition to the use of thyroid or other endocrine product, is aimed at correction of the deformity and the prevention of further slipping after this has been accomplished. There is no unanimity of opinion as to the best methods for accomplishing these

aims, but as time goes on I find myself becoming therapeutically more and more conservative in the approach to these cases. Strong skeletal traction will reduce most of the acute slips and many of the chronic ones, although one must not expect to get a perfect contour, as the changes which take place in the shape of the neck and head and of the epiphysial disk during the gradual development of the lesion do not allow reposition with absolutely normal relationship of parts. In cases in which approximate reduction is obtained, and this may take several weeks, or in very early cases in which the slipping is as yet minimal, either lighter traction must be maintained until the epiphysial line closes or fixation of the head must be assured by operative means. Multiple drilling, sliver bone grafts through drill holes, a large bone graft, the Smith-Petersen nail and vitallium screws have all been used for this purpose and each has its advocates. There is probably not much choice between them, but it should never be forgotten that the operation, of whatever type, is only a means to an end, and that end is union of the epiphysis to the neck. Until this has taken place, recurrent slipping may happen at any time.

If reduction cannot be obtained by traction, one must decide whether to manipulate the hip, perform a radical operation immediately or wait until fusion of the epiphysis has occurred in the deformed position and then resort to some type of osteotomy. I have seen some excellent results from manipulation but many more poor ones, with stiffness amounting almost to ankylosis and not infrequently aseptic necrosis of the head. The same is true of open reduction of the head and of wedge osteotomy of the neck and I am therefore inclined to postpone radical treatment in these cases until a trochanteric osteotomy can be performed. In the meantime, progression of the lesion must be stopped by recumbency, with or without traction, or by the use of an efficient ring-caliper splint. The osteotomy will at least partially correct the deformity and will obviate the danger of further intra-articular pathologic change. Arthritic changes will, however, certainly appear later in life under any circumstances, although the nearer to normal the weight bearing lines can be placed the later will these changes occur. Radical treatment may be called for at this time if the disability becomes too great.

Disturbances of the epiphyses other than at the hip, which come under the classification of osteochondrosis, are of relative unimportance once the diagnosis has been made, but great care should always be taken to rule out more severe conditions with which they may be confused.

Vertebral epiphysitis, a condition in the spine probably analogous to Legg-Perthes disease in the hip, does not occur until puberty, as the epiphysial plates of the vertebral bodies develop at that time. Most cases are seen in boys between 14 and 17 years of age and the smaller group in girls somewhat earlier. There are backache and fatigue, with the gradual development of a rounded dorsal kyphosis. Only rarely is there any actual pain. Tuberculosis of the spine is the main lesion that must be ruled out, and the lack of acute symptoms and the rounded curve are the distinguishing differences. The roentgenogram makes the diagnosis clear. With no treatment the rounding of the spine may increase, but in the end this deformity is the only symptom, and as the spinal epiphyses may not unite to the bodies until early in the twenties there can be progression up to this time. Eighteen year old

boys with this condition therefore should not be accepted into the armed services; but after the epiphyses have united the deformity itself, unless very severe, should be no drawback. If seen and recognized early, part of the deformity, at least, can be prevented and the symptoms alleviated by recumbency, plaster of paris or brace support and active muscular exercise tending to strengthen and straighten the back.

Osteochondrosis of the tuberosity of the tibia (Osgood-Schlatter disease) is a fairly common condition seen usually in active adolescent boys which fortunately leads to no permanent disability. There is some thickening of the tubercle, with tenderness on pressure over this point and discomfort or pain on active use of the knee. Treatment aims to relieve the symptoms by rest and lessening of the pull on the patellar tendon, and thyroid may also be given. Strapping, splints and plaster of paris can be used but recovery occurs in all cases regardless of the therapy. Many cases are over-treated.

An osteochondrotic lesion similar to that at the tibial tubercle is found in the heel, the so-called apophysitis of the os calcis. Reducing the pull on the achilles tendon by raising the heel of the shoe is usually all the therapy needed, although in acute cases a short period of complete rest may be required at first. Healing always takes place and there is never any residual disability.

The other epiphysial disturbance in the foot of any importance is the involvement of the head of a metatarsal, almost always the second, with an osteochondrosis (Köhler's disease, Freiberg's infraction). Rest and protection relieve the symptoms quickly, and no disability results after the epiphysis has united. A full length steel in the sole of the shoe or an anterior arch bar usually is sufficient treatment. The lesion in the tarsal navicular to which Köhler's name is given, although similar in pathology, treatment and prognosis, is not, of course, in an epiphysis.

Time does not permit a discussion of the various epiphysial lesions which are due to congenital defects, definite infections and acute injury, which properly do not come under my subject but which must always be considered in making a differential diagnosis. If the possibilities are always kept in mind, the clinical and roentgenologic findings should make most diagnoses fairly certain.

25 West Fourth Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. DOUB AND COLE

DR. W. EDWARD CHAMBERLAIN, Philadelphia: Cloward and Bucy (*Am. J. Roentgenol.* 38:681 [Nov.] 1937) showed that there is a high incidence of spinal extradural cyst in cases of kyphosis dorsalis juvenilis, and that when both of these conditions are present the former is the cause of the latter. I'm sure we all agree with Dr. Doub when he classifies Legg-Perthes' disease of the hip, Osgood Schlatter's disease of the tibia, Köhler's disease of the tarsal, scaphoid and a score of similar involvements of other parts as manifestations of the same disease process differing only in location. For many years we have used the term "osteochondritis juvenilis" for all of these conditions, differentiating them from one another by adding a word or two for anatomic localization. Thus Legg-Perthes' disease becomes osteochondritis juvenilis of the hip; Köhler's disease becomes osteochondritis juvenilis of the tarsal scaphoid, and so on. We must question whether Dr. Doub's terminology "aseptic necrosis" should replace the older terminology, "osteochondritis juvenilis." The proved cases of "aseptic necrosis" in bone, visualized for us by Dr. Phemister and his co-workers,

and well displayed in Dr. Henry K. Taylor's scientific exhibit at this meeting, show a very different gross pathologic and roentgenographic appearance. Dead bone retains its calcium content, and were the primary underlying early change in this condition actually an aseptic necrosis would we not see the x-ray appearance of that condition? Instead, as Dr. Doub has shown, we find foci of demineralization as the earliest visible change. Only in those cases in which impaction has taken place do we see anything reminiscent of Phemister's aseptic necrosis picture, and in such cases the x-ray appearance is explained by the presence of the impaction. Dr. Doub's paper presents an excellent and thoughtful review of this important entity. Whether the name which he asks us to accept for it will stand the test of time is open to some question. We must look to the histopathologist for the answer to that question.

DR. FRANK R. OBER, Boston: I am not quite satisfied that these conditions should be called epiphysitis, especially in Scheuermann's disease. There are four types of spinal vertebrae which may be observed by taking lateral x-ray films of newborn infants. First there is the normal shaped vertebra, second the egg shaped vertebra, of which there may be several, the condition being more prominent in the lumbar region than in any other, third there is the one with the incisura and fourth there is one with a disturbance of the vertebral plates and on the anterior superior and inferior surfaces of each vertebra. The third and fourth types usually persist over a long period of time and may result in the so-called epiphysitis juvenilis, which is known as Scheuermann's disease. These two conditions represent a delay in the normal laying down of lime salts. The incisura defect is filled with fibrous tissue. Many of the cases in the fourth group show on physical examination an increased lumbar lordosis, and when the lumbar lordosis is increased the two curves above are always affected; that is, an increase in the normal kyphosis of the dorsal and a cervical lordosis of the cervical spine occurs. In most of these cases there is present a positive abduction sign and shortening of the posterior leg muscles. The pull of the contracted fascia of the thigh on the pelvis increases the lumbar lordosis and probably affects the spine, so that lime salts are not laid down as rapidly where there are no fascial contractures. Dr. Frank Dickson of Kansas City has done a fasciotomy in many of these cases, and the improvement on the so-called epiphysitis has been much more rapid than by many other methods. The point in the diagnosis of Legg-Perthes' disease is that if one inspects the hips one will notice that the contour of the trochanter is much more prominent on the affected side than on the other. The best treatment of Legg-Perthes' disease is the application of non-weight bearing splint in the singular cases and bed treatment in the double cases until the head shows signs of normal recovery. Otherwise, if these patients are allowed to bear weight, they may develop a misshapen head, acetabulum and a degenerative arthritis in people as young as 20. In a preslipped femoral epiphysis or a slightly slipped femoral epiphysis most of these patients will make an excellent recovery if allowed to walk on a non-weight bearing splint. At the Children's Hospital, Boston, Dr. William Green has treated a large series of cases of slipped femoral epiphysis by conservative measures, using balanced traction and Thomas splint. Operative methods do not always result in a normal useful hip joint.

DR. DALLAS B. PHEMISTER, Chicago: As Dr. Doub mentioned, Axhausen was responsible for the first descriptions of the pathology of most of these necrosing lesions occurring in the epiphyses and short bones of children and adolescents. But aside from Kienböck's disease of the lunatum and Köhler's disease of the metatarsals he did not report the condition in adults. In the past eight years it has been recognized with increasing frequency in the epiphyses and shafts of the long bones of the extremities of adults. The lesion may occur singly or multiple in the epiphyses or shafts or in both locations. The essential pathologic change is blockage of the blood supply followed by necrosis of the bone without any evidence of infection in the necrotic area. The cause of the vascular blockage, whether local disease or embolism, was not known in about half of the reported cases; but in the remainder it was caisson disease, in which liberated nitrogen gas produced either embolism or, what appears less likely, direct pressure on the blood vessels within

the bone. As to diagnosis, the condition was long misinterpreted both pathologically and roentgenologically. The epiphyseal lesions, nearly always confined to the heads of the femurs or humeri, are usually first recognizable in roentgenograms after the lapse of many months because of the breaking down of the weight bearing portions and of the density changes in the rest of the epiphysis due to creeping substitution of dead bone by new bone. The end result after some years is a deforming arthritis frequently containing osteocartilaginous loose bodies. The dead areas in the shaft undergo creeping replacement by new bone in their peripheral portions, but, if large, the central portions persist and undergo calcification, which makes them recognizable in roentgenograms because of increased density particularly about their margins. The changes are illustrated in the first autopsy reports published by Kahlstrom, Burton and myself seven years ago.

DR. H. P. DOUB, Detroit: The question is asked Where does the slipped epiphysis fit into this picture, and what relation does it bear to the other diseases which have been described? In my opinion slipped epiphysis fits exactly into the general picture of aseptic necrosis, having the same etiologic basis. Because of limitations of time discussion of this condition was omitted, but it will be included in the published paper. In a case of slipped epiphysis involving the capital epiphysis of the femur, the first sign is a slight widening of the epiphyseal line, which is most apparent on films made in the lateral projection (this view is also important in Legg-Perthes' disease). As this widening of the epiphyseal line increases in extent and irregularity, one should observe closely for the first signs of displacement of the epiphysis itself. It is unusual in these cases for the epiphysis to show necrosis, though this seems strange if the theory of disturbed vascular supply is to be accepted. It is true, as we all recognize, that the term aseptic necrosis is on trial. It is also true that the final result in aseptic necrosis of the developing epiphysis is different from that in the adult. The changes in the adult have been well shown by Dr. Phemister, who has done a great deal of work on this problem.

DR. W. H. COLE, St. Paul: There are two things mentioned by Dr. Ober that I should like to reemphasize. First, I don't believe anybody knows whether all of these conditions belong together or not. That is the reason why those responsible for the Standard Nomenclature of Disease use the word "osteochondrosis," in which they have put these cases, although not necessarily claiming that they all belong together. It is merely a convenient spot for them until the cause can be discovered and when we know whether they all belong to the same underlying condition or whether they are separate entities. Another point is that since we have started taking multiple x-rays of children who have epiphyseal lesions every once in a while we do pick up lesions in other spots. Köhler mentioned finding it in the patella and in the foot in the same case. If we examine all the bones, we might find changes in other epiphyses which may not be giving any clinical symptoms.

Number of Hospital Beds in Korea.—In 1938 there were 149 hospitals in Korea. Four were large government institutions under the direct control of the government general, 50 were public establishments maintained by individual provinces or municipalities, approximately 20 were Christian mission hospitals and the remaining ones were private institutions, at least two thirds of which were owned by the Japanese. The large government and mission hospitals are located in the few important centers, and the provincial and mission hospitals, along with the private institutions, provide a network of small but well distributed plants throughout most of the peninsula. In addition to the hospitals mentioned there are numerous small so-called hospitals scattered over Korea; they have no beds and are essentially physicians' offices or dispensaries. On the basis of a population of 24,000,000 there is 0.3 hospital bed per thousand of population (United States, 9.7 per thousand of population). Obviously, such a number of beds is grossly insufficient for the needs of the local people.—Simmons, James S., and others: *Global Epidemiology*, Philadelphia, J. P. Lippincott Company, 1944.

THE COORDINATION OF MEDICAL AND BLUE CROSS PLANS

LESTER H. PERRY

HARRISBURG, PA.

One of the most important problems facing many prepayment medical plans concerns the manner in which they shall cooperate with Blue Cross organizations. In approaching this problem, we must first of all recognize the more basic problem we are all trying to solve. That problem is to equalize the financial impact of sickness. It is generally agreed that the answer to this problem lies in the application of the insurance formula to the cost of medical care. There is considerable disagreement, however, about how such an insurance plan should be administered. Some people believe that a compulsory governmental plan is the answer. Others believe in the voluntary approach afforded by Blue Cross and medical prepayment plans.

In order to win the support of the public for such voluntary plans, it is essential that these plans do a good job without delay. No one should be deluded about the present success of these voluntary efforts. The December 1944 issue of *Fortune* magazine carries a feature article entitled "U. S. Medicine in Transition." One of the conclusions reached by the editorial board of *Fortune* is that "Blue Cross is popular and solid but its scope of benefits is so limited that it can contribute little to the extension of medical care required by the country." In many respects Blue Cross has done a remarkable job, but Blue Cross plans are only a partial answer to one small segment of the total problem. To date voluntary medical plans have provided an even less complete solution to another segment of the problem. The vast majority of people are not members of either plan, and the combined coverage of the two plans still leaves large areas in the field of medical care untouched.

The common goal of both Blue Cross and voluntary medical plans is to solve the basic problem more satisfactorily than any government plan. In order to accomplish this goal, Blue Cross and medical service plans must work harmoniously and effectively together. If these plans work independently, each will continue to attack only a small segment of the basic problem. They will also encounter such difficult administrative problems as dual payroll deductions, confused public relations and uneconomical duplication of effort. If these plans work at cross purposes, they will merely fertilize the soil in which the seeds of federalized medical care are being planted. Mutual cooperation, therefore, is essential to the optimum success of both plans—Blue Cross as well as medical.

Cooperation is a two way, give and take proposition. It requires adjustments on both sides and continued respect for the rights and privileges of both groups involved. In real cooperation there can be no attempt by either organization to dominate the affairs of the other.

In general, the relationship between Blue Cross and medical plans follows one of these four patterns:

A. *No coordination of activities.* Under this arrangement each plan operates independently of the other.

B. *Separate corporations and separate administrative staffs.* Under this arrangement Blue Cross contracts to perform certain functions for the medical plan—usually

publicity, sales promotion, collection of premiums and service to member groups. The medical plan handles its own claims, its relations with the medical profession and its general books of account. The relationship between the two corporations is that of independent contractors.

C. Separate corporations but identical administrative staffs. Under this arrangement medical service is administered completely by the Blue Cross plan. The medical plan exists in theory, but it has no personnel. The administrative staff of the Blue Cross plan serves also as the administrative staff of the medical plan.

D. One corporation. Under this arrangement medical service is included as part of Blue Cross coverage. The medical plan, as an independent organization, does not exist.

Although some of the earliest medical plans did not originally contemplate joint operation with Blue Cross, the advantages of mutual cooperation soon became apparent to all concerned. Consequently, all of the larger medical plans now cooperate with Blue Cross plans. In a few localities cooperation has reached the extreme of complete amalgamation. This is the case in Delaware, Chapel Hill, N. C., and Huntington, W. Va.

Most medical plans are coordinated with Blue Cross on the basis of arrangement B or arrangement C. The number of plans in each of these categories is about equally divided, but the number of subscribers covered by plans operating under arrangement B (separate corporations and separate administrative staffs) is approximately three times the number covered by all other plans combined.

There is practically no disagreement among those interested in either Blue Cross or medical plans with regard to the advantages of joint operation. The argument centers around the degree to which Blue Cross should manage the affairs of medical plans. In Delaware, for example, the medical profession apparently believes that only one corporation is necessary. In Colorado, Massachusetts, New York and a few other places there are two corporations but the profession has apparently agreed to sacrifice separate administrative identity and to relinquish all executive management to the Blue Cross staff. Even in California, Michigan, New Jersey and Pennsylvania—which have the most moderate type of cooperative arrangement—the medical plans have turned over to Blue Cross management the responsibility for certain of their important functions.

Since Blue Cross plans were in the field first and, as a consequence, had administrative organizations already set up, it was only natural that cooperation developed in the manner in which it did; namely, that Blue Cross organizations were engaged to perform certain services for medical plans. It would have been just as logical for medical plans to perform these services for Blue Cross had the order of precedence been reversed.

The important fact to note, however, is that under all three methods of cooperation every concession required has been made exclusively by the medical plans. In an effort to combat a fast moving social trend which threatens to engulf both these voluntary efforts, even the most conservative medical plans have willingly entrusted to Blue Cross management the important functions of public relations, sales, premium collection and service to member groups. Blue Cross, on the other hand, has relinquished none of its authority or responsibility; in fact, it has never been asked to do so. No

medical plan in our knowledge has ever proposed that it handle even the smallest fragment of Blue Cross activity.

Concession and compromise on the part of medical plans are desirable in order to achieve unified public relations, single payroll deductions and economy of operation. However, many thoughtful physicians are sincere in their belief that it is neither necessary nor desirable for medical plans to surrender their corporate existence (as required by arrangement D) or their separate administrative identity and all executive management (as required by arrangement C).

Medical leaders in the states of California, Michigan, New Jersey and Pennsylvania believe that cooperative arrangement B is the most desirable. Following are some of the more important reasons why they have reached this conclusion:

ARGUMENTS FOR ARRANGEMENT B (SEPARATE CORPORATIONS AND SEPARATE STAFFS)

1. It provides for unified public relations and thereby solves one of the basic problems of independent operation.
2. It permits a single payroll deduction and thereby solves one of the most important practical difficulties of separate operation.
3. It promotes desired economy of operation through the use of a single sales force and the joint collection of premiums.
4. It allows for the assumption of active responsibility and authority by the medical organization in the operation of its own plan. This is a distinct advantage according to the conclusion of A. M. Simons and Nathan Sinai, as reported by the Committee on the Costs of Medical Care: "A comparative study of many health insurance systems seems to justify the conclusion that the evils of insurance decrease in proportion to the degree that responsibilities, with accompanying powers and duties, are intrusted to the medical professions."
5. This type of arrangement is in successful operation in the two oldest and largest medical plans in the country—California and Michigan.

The chief arguments against arrangement B, together with comments on these arguments, are as follows:

ARGUMENTS AGAINST ARRANGEMENT B

1. It is sometimes stated that in Michigan, which has the outstanding medical plan in the country, the two organizations are not actually operating as separate units in accord with the terms of their current joint operations agreement.

This statement has been categorically denied in recent communications received from officials of both plans in Michigan. The charge is a serious one, and—if true—it should be supported by evidence, none of which has been thus far produced.

2. It is said that the trend is away from arrangement B and in the direction of arrangement C—complete Blue Cross management of medical plan administration.

That assertion may be true, but it has no merit as an argument because trends can be either good or bad. There is, for example, a much more powerful trend toward a compulsory governmental plan for both hospitalization and medical care. If we are simply to follow trends, why not follow that one?

3. It is argued that arrangement B is not as economical as arrangement C.

This may be true to a small degree—perhaps 1 or 2 per cent. But real saving in the cost of administration occurs between arrangement A (independent operation) and arrangement B. Under arrangement B all impor-

tant functions which would otherwise have to be duplicated are administered by the Blue Cross plan. This includes publicity, sales promotion, collection of premiums and service to member groups, all jobs which would have to be done twice under independent operation. But that is not true with claims, each of which has to be processed only once no matter who does the job. There must be a medical director with an adequate staff to handle medical claims, whether this work is done by the medical plan or by the Blue Cross plan. To combine the two claim departments may effect some slight saving, but it would never reach major proportions.

4. Physicians, it is said, are not qualified to manage a business enterprise.

Modesty is commendable, and it is wise to acknowledge human limitations; but such an admission on the part of the medical profession would carry self abnegation to unwarranted depths. The American Medical Association, most of the state medical societies and even the larger county medical societies conduct many enterprises in which good business procedure is essential. Publication activities of these medical organizations—to mention only one feature of their work—involve millions of dollars annually; yet control of medical societies is vested in boards composed exclusively of physicians who discharge their responsibilities with success. The medical plans in California and Michigan are being operated successfully by physicians.

Blue Cross boards are composed of educators, contractors, hospital administrators, physicians, philanthropists, bankers, politicians, merchants and representatives of a hundred and one other fields of human endeavor. Executives of successful Blue Cross and medical plans have likewise come from many fields, including accounting, insurance, hospital administration, medical society work, the produce business, governmental service, the practice of medicine, sales, statistics and welfare work.

Are contractors or bankers or politicians or merchants any better qualified to determine the policies of medical plans than the medical profession?

There is probably not a Blue Cross board member in the country who could manage the statistical department of his own plan. All such boards must buy legal advice, executive ability, actuarial knowledge, statistical training and a host of other specialized skills. Boards of directors composed of physicians can buy all these things just as easily as boards composed of laymen. Physicians are not expected to do the job of executive management themselves.

5. The point is made that good business administration demands unified rather than dual authority.

Every one agrees that single authority is a fundamental of successful business administration. However, arrangement B provides for just that. Michigan Hospital Service, for instance, contracts with Michigan Medical Service to perform certain functions for the medical plan. Michigan Medical Service has no control over the employees of Michigan Hospital Service, which operates a clearcut, straight line organization headed by its executive director, who retains complete and exclusive authority with no interference whatever by the medical plan. The relationship between the two organizations is simply that of independent contractors. Real twin headed authority, which is admittedly unhealthy, exists only in arrangement C.

6. The fear is sometimes expressed that Blue Cross plans might jeopardize the good will of their subscribers if they act as the sales agency for medical service but do not also settle medical claims.

The best proof that this fear is unjustified lies in the success of Michigan Hospital Service, whose officers wrote under date of Dec. 8, 1944 that "there has been no difficulty with Michigan Hospital Service subscribers because it does not process and approve the claims of Michigan Medical Service."

This method of cooperation, in fact, has enabled Michigan Hospital Service to become the second largest Blue Cross plan in existence. It ranked third nationally in net enrolment gain for the third quarter of 1944. These facts not only dispel apprehension about arrangement B but, on the contrary, emphasize that it operates to the advantage of the Blue Cross plan.

There seems to be a tendency for most of the newly formed medical plans to follow cooperative arrangement C in their relationship with Blue Cross plans. Perhaps there are some advantages to this type of arrangement, but there are also insidious hazards involved which should be seriously considered. Following are the most important:

HAZARDS IN ARRANGEMENT C (TWO CORPORATIONS, ONE STAFF)

1. Arrangement C necessitates dual authority at the top, which is unanimously condemned.

Under this type of arrangement the chief executive is in charge of both corporations and is therefore obliged to report to two boards of directors. He and his staff must serve two masters, and this has never been accomplished to the satisfaction of all concerned. Such an arrangement may seem to work well for a brief period, but the test of time will reveal its inherent weaknesses.

2. In actual practice, if the interests of the two organizations do not exactly coincide, the executive and his staff will favor the dominant organization.

In the beginning this would put the medical plan at a disadvantage; later it might put the Blue Cross plan at a similar disadvantage. One condition is as unhealthy as the other, and neither should be permitted to develop.

3. This arrangement creates a situation under which the Blue Cross plan, which provides none of the funds and underwrites none of the losses for the medical plan, spends all of the money and manages all of the activities of the medical plan.

According to Jay C. Ketchum, executive director of Michigan Medical Service and former deputy insurance commissioner for the state of Michigan, such a condition would be intolerable to the medical plan. "Claim administration," he says, "must remain in each plan for its own subscribers."

4. Arrangement C puts the medical plan at the mercy of any weakness in the management of the Blue Cross plan because—with no active organization whatever of its own—it has no other choice but to rely with pathetic impotence on the hospital plan with which it is associated.

Blue Cross plans in general have done a good job, but neither their officials nor their staffs are immune to the weaknesses of other human beings. What opportunity would the board of directors of the medical plan have under this arrangement to correct an unsatisfactory condition in the Blue Cross method of administering medical activities, particularly if the two boards dis-

agreed? To make the attempt may bring the organizations into a headlong clash. Ultimately the medical plan would have to acquiesce for the obvious reason that it would have no alternative.

5. Arrangement C encourages the deterioration and ultimate dissolution of the medical plan.

This is true because arrangement C is based on the fallacious theory that an organization can remain strong and vigorous when stripped of all activity and responsibility. That is just as impossible with a business organization as it is with a physiologic organism. To be sure there will be a theoretically active board of directors for the medical plan; but the organization they represent will be teamed with a stronger one which shoulders all the burdens of both. In that rarefied atmosphere the members of the board of the medical plan will lose interest because of lack of responsibility. Their participation will gradually become more and more passive, and the medical plan itself will atrophy like a muscle from inactivity. The final result will be complete absorption by Blue Cross.

6. The gravest danger of arrangement C is its irreversible finality.

Theoretically any of the four arrangements can be tried experimentally and, if found unsatisfactory, discarded in favor of another method of coordination. Unfortunately, however, it does not work out this way in actual practice. Modifications in the direction of increased Blue Cross control can be made easily, but modifications in the other direction are difficult and, once large volume is achieved, virtually impossible.

In Michigan, for example, arrangement B is in effect. It would be a simple matter, administratively speaking, to change to arrangement C or even to arrangement D. Michigan Hospital Service could completely absorb Michigan Medical Service at a moment's notice. Blue Cross would simply take over the assets and equipment of the medical plan and continue to employ as many of the hundred-odd employees of Michigan Medical Service as were needed in the new setup.

To change from cooperative arrangement B to completely independent operation, however, is a different matter. Michigan Medical Service with three quarters of a million subscribers would be obliged to start from scratch in the matter of public relations, sales promotion and premium collection. That would be difficult. But the problem which would make the task impossible involves the securing of two payroll deductions where only one exists today.

The likelihood that the plans in Michigan will change in either direction seems remote. However, because of the hazards of arrangement C, many persons believe that medical plans operating on that basis will want to change to arrangement B at some future time. If that comes to pass after these plans have secured real volume, they will find that they have been traveling on a one way street. For example, assume that arrangement C was now in effect in Michigan. That means that the medical plan would exist on paper only, with no working personnel, no equipment, no administrative setup whatever, nothing but a board of directors. To effect a change from arrangement C to arrangement B, this board of directors would face the job of administering surgical and obstetric care to three quarters of a million persons. And they would have nothing to start with! Simply to state the problem is to prove that it could not be solved.

Arrangement B can be started as an experiment which, if proved unsatisfactory, can be changed to arrangement C or arrangement D at any time in the future. Arrangement C, however, virtually eliminates the possibility of changing in the opposite direction. To all practical purposes it involves final and irreversible action rather than experimentation. This condition should be clearly understood by everybody interested in medical service plans.

Arrangement C cannot long endure. Ultimately it must move in the direction of either arrangement B or arrangement D. Since large volume will eliminate the possibility of moving toward arrangement B, the only course open is complete amalgamation with Blue Cross. The choice, therefore, really lies between arrangement B and arrangement D, and this alternative should be realistically faced at the outset.

If it can be proved that Blue Cross should completely administer medical as well as hospital service, let us honestly admit that fact. Then let us take positive steps to disband medical plans in a forthright manner and cooperate with Blue Cross in an effort to add medical service to their coverage. If it is not proved that Blue Cross should completely administer medical service, then let us strive to maintain the independence of medical plans. That can be done only by having them continue to be organizations with real responsibilities. Under any other arrangement they will deteriorate. It would be a mistake for the medical profession to pave the way for the dissolution of medical plans by default.

Granted that there may be some merit to the arguments in favor of arrangement C (as there usually is in such differences of opinion), the fact remains that medical plans which desire arrangement B are asking nothing more of Blue Cross than the right to retain a little more responsibility for the conduct of their own affairs than some people think they should have. Medical plans are requesting no voice whatever in the management of Blue Cross activities. This fact, coupled with the knowledge that when a medical plan begins to cooperate with Blue Cross it can move in only one irreversible direction, points inevitably to arrangement B as the soundest and most equitable method of beginning to work together cooperatively. One may enter lightly on a course of action which involves no permanent commitment; but in areas of conduct which require irrevocable decisions, anything less than judicious consideration and temperate action is unworthy of mature minds.

The justification for this point of view will be recognized by all fair minded men, who can therefore be expected to regard the attitude of the medical profession with sympathetic understanding. Helpful cooperation should then follow as a natural result.

Blue Cross has been accused of attempting to dominate medical service plans. This accusation has been emphatically denied by Blue Cross officials. Whether or not it is justified remains to be seen. However, in justice to those who make such charges, it must be admitted that the trend has been toward increased control of medical plan activities by Blue Cross organizations.

If Blue Cross officials are sincere in their denial of this accusation and if they want to cooperate with medical plans in an effort to preserve the voluntary principle under which both organizations operate, they have the opportunity to prove their sincerity to all members of the medical profession. All they have to

do is to acknowledge that real cooperation is a two sided proposition which requires each contracting party to give as well as take in the readjustment process. Once this fact is acknowledged by all concerned, representatives of Blue Cross and medical plans can, by working together, solve the problem of coordination.

Arrangement B will work. In fact, it has been working for five years in the medical plan which has more subscribers than all other plans combined. Here is what the officers of the cooperating Blue Cross plan say about this arrangement in a communication dated Dec. 8, 1944: "Michigan Hospital Service would recommend very highly this type of cooperation to any Blue Cross plan."

230 State Street.

TREATMENT OF STAPHYLOCOCCIC, PNEUMOCOCCIC, GONOCOCCIC AND OTHER INFECTIONS

WITH PENICILLIN

CARL G. HARFORD, M.D.

SAMUEL P. MARTIN, M.D.

PAUL O. HAGEMAN, M.D.

AND

W. BARRY WOOD JR., M.D.

ST. LOUIS

(Concluded from page 259)

GONOCOCCIC INFECTIONS

Table 3 records the results of the penicillin treatment of 12 female patients with sulfonamide resistant gonorrhea, and 1 male patient with sulfonamide resistant gonococcic prostatitis and epididymitis. Before being given penicillin each of the female patients in this series was subjected to an intensive course of sulfadiazine therapy during which the blood concentration of the drug was maintained at a level of 7 to 20 mg. per hundred cubic centimeters. Only after the sulfonamide therapy had failed to cure the infection was penicillin treatment instituted. In all but 2 cases a total dosage of only 75,000 units or less was employed. All but 1 of the 12 female patients were followed in the hospital for a period of thirty days after treatment.¹¹ During this period only one questionable relapse was observed. The following case report illustrates the effectiveness of penicillin in the treatment of acute peritonitis caused by a sulfonamide resistant strain of gonococcus:

CASE 57.—History.—M. B., a woman aged 20 years, was exposed to a known case of syphilis approximately five months before admission to the hospital. Shortly thereafter she was told that her serologic test for syphilis was positive, and she received antisyphilitic treatment in a hospital near her home. Two months before entering the Barnes Hospital she was transferred to the Mid-West Medical Center, where she was found to have gonococcic urethritis and cervicitis. For the latter infection she was given 4 Gm. of sulfathiazole a day for five days. Since cervical cultures remained positive, she was later given 6 Gm. of sulfadiazine a day for five days. During this period she stole a supply of tablets and took an extra one for each one given by the nurse. In spite of the relatively large amounts of sulfadiazine ingested by the patient, gonococci continued to survive in the vaginal discharge. Further examination revealed a large inflamed cervix with profuse milky discharge issuing from the cervical os. There was bilateral parametrial tenderness. The blood Kahn test was negative. On admission

to the Barnes Hospital the patient was given a second course of sulfadiazine therapy during which the concentration of drug in the blood reached levels of 12 and 14 mg. per hundred cubic centimeters. Five days after the drug was discontinued the patient began to menstruate and suddenly developed severe lower abdominal pain, fever, pronounced rebound tenderness, muscle spasm and boardlike rigidity of the entire abdomen. Vaginal palpation caused severe pain. A diagnosis of gonococcic peritonitis was made, and the patient was given 20,000 units of penicillin intravenously, followed by two intramuscular injections of 20,000 units each at four hour intervals. Subjective improvement with complete disappearance of abdominal pain was noted four hours after the first injection, and on the following morning the patient felt completely well (fig. 8). She remained in the hospital for thirty days of observation, during which time repeated cervical smears and cultures failed to reveal the presence of gonococci.

Summary.—A woman aged 20 with gonococcic urethritis and cervicitis failed to respond to three courses of sulfonamide therapy. Shortly after the third course she developed acute gonococcic peritonitis, which responded promptly to 60,000 units of penicillin given over an eight hour period. Observation of the patient for a thirty day period did not reveal recurrence of the gonococic infection.

MISCELLANEOUS INFECTIONS

Patients with various other infections were also treated with penicillin (table 4). Those with brucellosis (case 69), cryptococcic meningitis (case 70), histoplasmosis (case 71), ulcerative colitis (cases 20, 73 and 74) and actinomycosis (case 72) all failed to respond to treatment. Three patients with subacute bacterial endocarditis were treated with penicillin (patients 75, 76 and 77). The first died at the end of the first week of treatment. The other 2 relapsed soon after the completion of a first course of treatment but they were retreated and now show no evidence of recurrence more than two months later. The last of these 3 patients was a woman aged 26 whose bacterial endocarditis was first noted when she was six months pregnant. She was carried through the last three months of pregnancy on penicillin treatment, was delivered of a normal full term child and was treated for more than one month post partum. A clinical diagnosis of patent ductus arteriosus had been made, and surgical exploration of the chest was carried out but no patent ductus was found. The patient received a total of 15,850,000 units of penicillin. Three months after the discontinuance of therapy she still had no fever or symptoms and the blood culture remained negative. Six patients with brain abscess (patients 26, 82, 83, 84, 100 and 101) were treated with penicillin and all but 1 died. In the 1 case in which recovery occurred, diagnosis was made on clinical evidence alone without benefit of surgical exploration. Established suppurative infections of the lungs (cases 92, 93 and 94) showed little response to penicillin therapy with the exception of that seen in 1 patient with a postoperative lung abscess who recovered promptly following penicillin treatment and bronchoscopy. A single patient with meningococcic meningitis (patient 68) was treated with penicillin and made a rather remarkable recovery in spite of the fulminating character of the infection. The effectiveness of penicillin in meningococcic infection and its ineffectiveness in brucellosis are illustrated by the following case reports:

CASE 68.—History.—J. A., a man aged 30, entered the St. Louis Isolation Hospital,¹² having had an upper respiratory tract infection for seven days and severe headache for two days. Thirty-six hours before admission he noted aching of his back

11. The twelfth patient remained in the hospital for only six days.

12. This case is reported through the courtesy of Dr. R. W. Maxwell.

and legs, and twelve hours later his neck became stiff and he began to vomit. When first examined he was comatose, his temperature was 37.2 C. (98.9 F.) and there was pronounced stiffness of his neck. Many small petechiae were seen over the neck, thighs, legs and feet. The Kernig sign was positive, and a blood count revealed a leukocytosis of 28,000. The spinal fluid was turbid and contained many gram negative intracellular diplococci later identified by culture as meningococci. The patient was immediately given sodium sulfamerazine subcutaneously, and the concentration of drug in the blood reached a level of 17.7 mg. per hundred cubic centimeters. In spite of this intensive sulfonamide chemotherapy the patient remained in coma, and culture of the spinal fluid drawn after forty-eight hours of treatment still revealed many meningococci. Because of the failure of the patient to respond to sulfamerazine, this form of treatment was discontinued and penicillin treatment was begun. The penicillin was administered by the intravenous, intrathecal and intra-ear routes; within twenty-four hours the patient regained consciousness, and on the following day he was able to take food by mouth. After three days of penicillin treatment the fever subsided and the patient made an uneventful recovery (fig. 9).

Summary.—A man aged 30 with meningococcal meningitis of five days' duration failed to respond to forty-eight hours of

gram positive cocci and gram negative diplococci. The therapeutic response observed in various forms of staphylococcal infection, severe pneumococcal disease (including meningitis), sulfonamide resistant gonorrhea and fulminating meningococcal meningitis is in agreement with results previously reported by British investigators¹¹ and by the Committee on Chemotherapy and Other Agents of the National Research Council.¹ Limited evidence is also advanced that penicillin has little effect in the treatment of brucellosis, histoplasmosis, cryptococcal meningitis and ulcerative colitis. Results in chronic osteomyelitis and brain abscess have been somewhat equivocal and, on the whole, disappointing, but further trial of penicillin in the treatment of these conditions is indicated. Although at present inconclusive, the results in 2 cases of subacute bacterial endocarditis have been encouraging.

Among the 20 patients with severe staphylococcal infection treated with penicillin, only 3 died. Sixteen of these patients were suffering from bacteremia when admitted to the hospital; the other 4 exhibited clinical signs of metastatic staphylococcal lesions indicating

TABLE 3—Gonococcal Infections

Case No.	Age	Sex	Diagnosis	Duration of Disease, Days	Penicillin Treatment			Other Specific Treatment	Results	Comment
					Days of Therapy	Total Dosage, Units × 1,000,000	Routes of Administration			
55	23	♀	Urethritis; cervicitis; salpingitis	130	1	0.060	IV, IM	None	R	
59	21	♀	Urethritis; cervicitis; salpingitis	77	1	0.060	IV, IM	None	R	
57	20	♀	Urethritis; cervicitis; salpingitis; peritonitis	120	1	0.060	IV, IM	None	R	
58	21	♀	Urethritis; cervicitis; pregnancy	40	1	0.060	IV, IM	None	R	
59	19	♀	Urethritis; cervicitis; arthritis	61	1	0.075	IV, IM	None	R	
60	27	♀	Urethritis; cervicitis; salpingitis	110	1	0.075	IV, IM	None	R	
61	16	♀	Urethritis; cervicitis; salpingitis	41	1	0.075	IV, IM	None	R	
62	21	♀	Urethritis; cervicitis; salpingitis	90	1	0.075	IV, IM	None	R	
63	19	♀	Urethritis; cervicitis; salpingitis	90	1	0.075	IV, IM	None	R	Fever resistant Positive smear, negative culture before therapy
64	27	♀	Urethritis; cervicitis; salpingitis	21	1	0.075	IV, IM	None	R	
65	25	♀	Urethritis; cervicitis; salpingitis	35	1	0.075	IV, IM	None	R	
60	29	♀	Urethritis; cervicitis; incomplete abortion	65	2	0.300	IV, IM	Dilation and curettage	R	Two positive smears and negative cultures after 75,000 O U; negative for 30 days after 225,000 O U.
67	25	♂	Urethritis; prostatitis; epididymitis	57	5	1.200	IV	None	R	

intensive sulfonamide chemotherapy. At the end of this period he was placed on penicillin treatment and recovered promptly.

CASE 69.—History.—L. W., a man aged 20, a butcher in a large packing house in St. Louis, noted malaise, fever, night sweats and increasing weakness twenty-five days before coming to the hospital. During the next two weeks these symptoms persisted and he lost 24 pounds (11 Kg.) in weight. Physical examination at the hospital revealed a temperature of 39 C. (102.2 F.), evidence of recent weight loss, moderate hepatomegaly, a palpable spleen and generalized lymphadenopathy. The white blood cell count was 4,200, with 60 per cent lymphocytes. A brucella organism was grown from the blood, and the patient's serum agglutinated the brucella antigen in a dilution of 1 to 2,560. The patient was treated intensively for one week with penicillin. Not only was the fever uninfluenced by the treatment but the blood cultures also remained consistently positive (fig. 10).

Summary.—Intensive penicillin treatment failed to influence the course of a severe brucella infection. Repeated blood cultures remained positive both during and after therapy.¹³

COMMENT

The results of the present study indicate that penicillin is a highly effective chemotherapeutic agent in the treatment of a variety of bacterial infections caused by

previous invasion of the blood stream. One of the patients who recovered was thought to have cavernous sinus thrombosis (patient 21). Although recoveries from this type of infection have been reported, they are certainly uncommon.¹⁵ The 3 fatal cases included a woman aged 33 with staphylococcal bacterial endocarditis, who died from rupture of a metastatic brain abscess, a youth aged 16 with staphylococcal furunculosis of the face who entered the hospital for treatment only after having developed metastatic pneumonia, cavernous sinus thrombosis and staphylococcal pericarditis and a woman aged 32 with ulcerative colitis who died from a massive intestinal hemorrhage. Recovery could hardly have been expected in any 1 of these 3 cases.

The significance of these results becomes apparent when they are compared with those reported by Skinner and Keefer¹⁶ in a series of 122 cases of staphylococcal bacteremia treated before the advent of penicillin. Among this large number of patients only 22 recovered.

14 Abraham, E. P.; Cham, E.; Fletcher, C. M.; Gardner, A. D.; Jennings, A. M.; Heath, N. G., and Florey, H. W.: Further Observations on Penicillin, *Lancet* 2: 177-188 (Aug. 16) 1941.

15 MacNeal, W. J.; Frisbee, F. C., and Blevins, A.: Thrombophlebitis of the Cervical Veins—A Review of Reported Recoveries with Special Reference to the Significance of Staphylococcal Origin, *Arch. Ophthalmol.* 29: 23 (1942).

13. Too much significance should not be attached to this 1 case report, since different strains of Brucella are known to vary in sensitivity to penicillin (Tsun, T.: In Vitro Action of Penicillin Alone and in Combination with Sulfathiazole on Brucella Organisms, *Proc. Soc. Exper. Biol. & Med.* 56: 8-11 (May) 1944).

16 Skinner, S. C.: Significance of Bacteremia Caused by Staphylococcus Aureus: A Study of 122 Cases and a Review of the Literature Concerned with Experimental Infection in Animals, *Arch. Int. Med.* 68: 851-875 (Nov.) 1941.

TABLE 4—Miscellaneous Infections

Case No	Age and Sex	Diagnosis	Etiology	Blood Culture	Duration of Disease, Days	Penicillin Treatment				Other Specific Treatment	Results	Comment
						Total Dosage, Units x 1,000,000	Days of Therapy	Body Wt., Kg	Routes of Administration			
68	30, ♂	Meningitis	Menigeococcus	0	8	1 32	8	74	IV, IT, IC	Sulfamerazine (B)	R	
69	20, ♂	Brucellosis	Brucella	+	26	1 54	5	55	IV, IM	Sulfamerazine and fever (A) Sulfonamide (B)	U I	
70	30, ♂	Meningitis	Cryptococcus (torula)	0	85	0 118	6	..	IT	..	U I	Multiple lesions at autopsy
71	6, ♂	Histoplasmosis	Histoplasma	0	28	1 71	20	..	IV, IT, tracheal	..	U I	Biopsy of bronchial lesion showed no change
72	17, ♂	Actinomycosis	Actinomyces	0	120	0 180	1	..	IV	Sulfonamide (B)	D	Treated only terminally
73	21, ♀	Ulcerative colitis	.....	0	70	1 60	10	52	IM	Sulfadiazine (B); colostomy	U I	
74	37, ♂	Ulcerative colitis	.....	+	10 yrs.	1 05	10	66	IM	..	U I	
75	63, ♀	Subacute bacterial endocarditis	Streptococcus viridans	+	150	1 750	7	..	IM	.....	D	Stuporous on entry; heart failure
76	26, ♀	Subacute bacterial endocarditis	Streptococcus viridans	+	30	15 85	82	48	IV, IM	Sulfonamide (B)	I	Relapse after first course; no recurrence more than 2 months after second course; delivered normal baby; explored for patent ductus arteriosus
77	20, ♀	Subacute bacterial endocarditis	Streptococcus viridans	+	54	18 65	51	50	IM	Sulfonamide (B)	I	Relapse after first course; no recurrence 2 months after second course
78	39, ♀	Pneumonia and empyema	Hemolytic streptococcus	0	7	0 320	2	53	IV, IP	Sulfamerazine (B)	D	Multiple abscesses of lung at autopsy
79	18, ♂	Pharyngitis	Hemolytic streptococcus	0	21	0 35	5	50	IM	..	R	Chronic glomerulonephritis with azotemia
80	37, ♂	Postlumbarotomy wound infection; meningitis	Hemolytic streptococcus	0	28	1 085	14	..	IV, IM, IT, locally	Sulfonamide (B)	D	Death after recovery from meningitis
81	51, ♂	Cellulitis of foot	Hemolytic streptococcus	0	6	0 43	3	91	IV	.....	D	Died from alcoholic encephalopathy
82	53, ♂	Brain abscess	Anaerobic streptococcus	0	26	2 66	6	52	IV	Craniotomy	D	Death from rupture of abscess
83	38, ♀	Osteomyelitis of frontal bone, brain abscess	Anaerobic streptococcus, hemolytic streptococcus	0	16	0 65	9	..	IV	Craniotomy; removal of frontal bone	D	Low dosage
84	51, ♂	Lung abscess; empyema, brain abscess	Anaerobic streptococcus	0	92	3 495	18	..	IV, IM, IT, IP	..	D	Lesions chronic, well localized; comatose on entry
85	32, ♀	Pelvic abscess, pneumonia	Anaerobic streptococcus; colon bacilli	0	31	2 36	15	..	IV, IM	Sulfonamides (B), drainage	I	Lungs cleared rapidly; no change in pelvic lesion
86	22, ♀	Abortion; septicemia, metastatic pulmonary lesions	Anaerobic streptococcus; hemolytic streptococcus	+	8	0 26	4	50	IV	..	D	Lesions seen at autopsy were healed; no cause for death
87	20, ♂	Cellulitis of arm	Hemolytic streptococcus, hemolytic staphylococcus	0	8	2 31	13	65	IV, IM	Drainage	I	Patient had chronic lymph edema and recurrent cellulitis
88	60, ♂	Cellulitis of thigh and leg	Hemolytic streptococcus; nonhemolytic staphylococcus	0	42	4 530	30	..	IV, IM, locally	Drainage	R	Massive involvement
89	65, ♀	Infected dermatitis	Hemolytic staphylococcus	0	29	0 693	16	..	IV, IM	X rays	R	Dermatitis due to sulfonamides; crabs treated later
90	07, ♀	Wound disruption	Hemolytic streptococcus, hemolytic staphylococcus	0	15	0 160	10	..	Locally	Sulfonamides (B)	R	Wound improved in 24 hours
91	21, ♀	Bronchiectasis and pneumonia	Pneumococcus, fusiform bacillus	0	114	0 425	6	73	IV	Sulfamerazine (B and A)	U I	Low dosage
92	58, ♂	Postpneumonec-tomy	Pneumococcus, hemolytic staphylococcus, fusiform bacillus	0	13	0 160	10	..	IP	Drainage	I	
93	43, ♀	Postoperative lung abscess	Questionable hemolytic staphylococcus	0	20	3 032	19	73	IM	Bronchoscopy	R	Prompt clearing of pulmonary infiltration
94	48, ♀	Empyema	Hemolytic staphylococcus; streptococcus; gas bacillus; actinomyces	0	10	8 62	55	43	IV, IM, IP	Drainage	I	Very prolonged course with numerous exacerbations treated
95	48, ♂	Multiple abscesses of brain, lungs, viscera and skin	Hemolytic staphylococcus; anaerobic streptococcus; fusiform bacillus	0	105	0 38	3	70	IV	Drainage; sulfonamide; arsenoxide	D	
96	43, ♂	Agranulocytosis; ulcerative pharyngitis	Postsulfonamide	0	4	0 21	4	..	IV	Pentamethylolide; liver extract	R	
97	50, ♂	Ring ulcer of cornea	Postsulfonamide	..	7	0 275	7	..	IM	..	U I	
98	?, ♂	Ulcer of cornea	Trammatie	..	17	0 008	8	..	Locally	..	R	
99	15, ♂	Sympathetic ophthalmia	...	..	2	0 780	8	..	IM	Fever	U I	
100	43, ♂	Sinusitis, cavernous sinus thrombosis; brain abscess	No significant organisms recovered	0	3	8 426	37	75	IV, IM, IT	Sulfonamide (B); craniotomy	D	Death appeared imminent on admission; signs of cavernous sinus thrombosis disappeared and meningitis healed; 2 craniotomies; died 51 days after start of penicillin
101	46, ♀	Brain abscess	No significant organisms recovered	0	35	2 09	18	85	IV	Sulfamerazine	R	Clinical diagnosis
102	25, ♀	Ulcerative pharyngitis	Leukosarcoma	0	16	2 02	4	63	IV	.....	D	Diagnosis established by sternal marrow examination after start of penicillin
103	10, ♀	Pneumonia	Unknown	0	11	0 380	5	..	IV	Sulfonamide (B)	R	Fever from sulfonamide

* Culture not taken.

tinued or the dose was reduced. In 1 case a residual lateral sinus thrombosis was found when a second surgical operation was performed (case 37). This experience suggests that demonstrable infected foci should be drained surgically and that penicillin treatment should be continued for at least a week or more after the clinical manifestations of meningitis have subsided. It is of interest that 5 of the 9 patients treated in the present study were subjected to mastoidectomy. The relatively high recovery rate observed may be related to the fact that the original focus responsible for the meningitis was eradicated surgically whenever possible.

Our experience with penicillin in the treatment of pneumococcal infections of the lungs is far too limited to be significant. Four patients with pneumococcal pneumonia responded to penicillin therapy, while 2 died. One of the latter apparently succumbed to uremia following a reaction to sulfonamide treatment, and the other was treated less than twenty-four hours before death. In 2 cases of pneumococcal empyema cultures of pleural fluid showed no growth soon after intrapleural administration of penicillin. Fever and leukocytosis, however, persisted in each case so that eventually it was necessary to perform a thoracotomy to evacuate the pus. It is possible that surgical operation could have been avoided even in these cases if the intrapleural injections of penicillin had been continued over a longer time.

Several investigators have already demonstrated conclusively that sulfonamide resistant gonorrhea in the male can be rapidly cured by penicillin therapy.¹⁹ Two comparable studies of female patients have been reported.²⁰ The use of penicillin in the treatment of gonococcal infections in the present investigation was limited in all but 1 case to women. Twelve female patients were treated with penicillin only after intensive sulfonamide treatment had failed to eradicate the infection. All but 1 patient responded promptly to a relatively small dose of penicillin (60,000 to 75,000 units) and the latter patient was promptly cured when retreated with a larger dose of the drug.

No untoward reactions to penicillin were noted in the present study. There was 1 questionable instance of urticaria, and a few patients complained of burning at the site of the intramuscular injection. Although thrombosis at the site of the intravenous injection was occasionally observed, it was thought in each case to be due to an indwelling needle rather than to the solution of penicillin. Persistent pleocytosis in the presence of negative spinal fluid cultures was seen in 1 patient with pneumococcal meningitis who was given penicillin intrathecally every day for a week in doses of 10,000 to 20,000 units. As soon as the intrathecal injections were discontinued, the cell count of the spinal fluid fell definitely. The virtual absence of toxic reactions observed in the present study confirms the generally accepted

opinion that penicillin is the least toxic effective therapeutic agent yet developed for the treatment of bacterial infections.

SUMMARY

1. Penicillin was used in the treatment of 103 patients suffering from various forms of bacterial infections.

2. The drug was administered systemically by both the intravenous and the intramuscular route. Systemic treatment was combined with local penicillin therapy whenever indicated, as in the treatment of surgical wounds, intrapleural and intrapericardial infections and meningitis.

3. Twenty patients with severe generalized staphylococcal infection, 16 of whom had bacteremia, were treated with penicillin. Only 3 died. Of the 11 patients in this group exhibiting metastatic staphylococcal pneumonia, only 1 failed to survive.

4. Patients with acute local infections due to the staphylococcus responded promptly to penicillin treatment.

5. Chronic infections due to *Staphylococcus aureus* responded less dramatically. Patients with chronic osteomyelitis showed temporary improvement, but in most instances there was eventually a recurrence of the infection.

6. Nine patients with pneumococcal meningitis were treated with penicillin, and all but 1 recovered. Mastoidectomy was performed in 5 of the 9 cases. The importance of continuing treatment for some time after the signs of meningitis have subsided was emphasized by the occurrence of relapse in 3 cases. Each of the 3 patients suffering relapse responded promptly to further therapy and eventually recovered.

7. Penicillin was found to be effective in the treatment of pneumococcal pneumonia but failed to cure pneumococcal empyema in 2 patients until after surgical drainage was instituted.

8. Twelve women with sulfonamide resistant gonorrhea were promptly cured with small doses of penicillin. Each patient was observed in the hospital for thirty days after the termination of treatment and only one questionable relapse occurred.

9. One patient with fulminating meningococcal meningitis responded dramatically to penicillin after forty-eight hours of treatment with sulfamerazine had apparently failed to influence the infection.

10. Three patients with acute bacterial endocarditis due to *Staphylococcus aureus* were treated with penicillin. One patient died; the other 2 are apparently well after two months and four months respectively. Three patients with subacute bacterial endocarditis due to *Streptococcus viridans* were treated. The first died; the other 2 relapsed soon after the completion of a first course of treatment but were retreated and now show no evidence of recurrence more than two months later.

11. No beneficial effects were noted in the treatment of brucellosis, cryptococcal meningitis, histoplasmosis and chronic ulcerative colitis.

12. The use of penicillin did not appear to eliminate the necessity for surgical drainage in certain cases of established pyogenic infections, but it was thought in some instances to lessen the risk of surgical operation.

13. No significant toxic reactions were observed.

19. Mahoney, J. F.; Ferguson, C.; Bucholtz, M., and Van Slyke, C. J.: The Use of Penicillin Sodium in the Treatment of Sulfonamide-Resistant Gonorrhea in Men: A Preliminary Report, *Am. J. Syph., Gonorr. & Ven. Dis.* 27: 525-528 (Sept.) 1943. Herrell, W. E.; Cook, E. N., and Thompson, L.: Use of Penicillin in Sulfonamide-Resistant Gonorrheal Infections, *J. A. M. A.* 122: 289-292 (May 29) 1943. Turner, T. B., and Sternberg, T. H.: Management of Venereal Diseases in the Army, *ibid.* 124: 133-137 (Jan. 15) 1944. Robinson, J. N., in Discussion on Penicillin, *Brit. M. J.* 2: 654-656 (Nov. 20) 1943; *J. A. M. A.* 124: 117 (Jan. 8) 1944; *Proc. Roy. Soc. Med.* 37: 112 (Jan.) 1944. Dawson, M. H., and Hobby, G. L.: The Clinical Use of Penicillin: Observations in 100 Cases, *J. A. M. A.* 124: 611-622 (March 4) 1944.

20. Cook, E. N.; Pool, T. L., and Herrell, W. E.: Further Observations on Penicillin in Sulfonamide-Resistant Gonorrhea, *Proc. Staff Meet., Mayo Clin.* 18: 433-437 (Nov. 17) 1943. Cohn, A.; Studdiford, W. E., and Grunstein, I.: Penicillin Treatment of Sulfonamide-Resistant Gonococcal Infections, *J. A. M. A.* 124: 1124-1125 (April 15) 1944.

Clinical Notes, Suggestions and New Instruments

CONGENITAL RECTOPERINEAL FISTULA ASSOCIATED WITH CONGENITAL ABSENCE OF THE VAGINA

G. SYDNEY McCLELLAN, M.D., AND EDWIN L. WILLIAMS, M.D.
NASHVILLE, TENN.

There are numerous reports of congenital anomalies of the anus and rectum including the writings of Berman,¹ Chandler,² Crowell and Dulin³ and David.⁴ Reports of congenital absence of the vagina include publications by Baldwin,⁵ Wharton⁶ and Frank.⁷

Little has been written, however, concerning a combination of rectal and vaginal deformities occurring in the same individual. This is doubtless due to the scarcity of clinical material. It is therefore our purpose in this paper to present a case of multiple congenital anomalies appearing in the same individual and to describe in some detail the operative procedures performed for their correction.

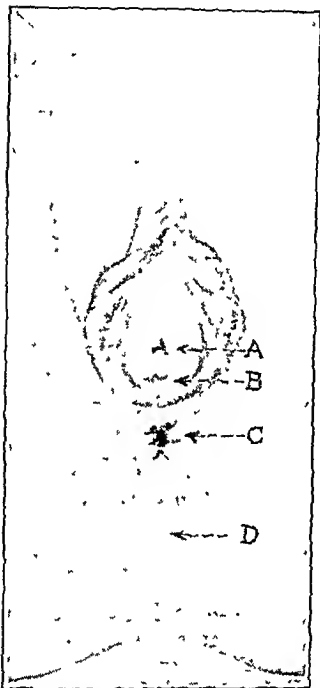


Fig. 1.—Vulva and perineum as first seen: A, urethra; B, vaginal dimple; C, perineal anus; D, sphincter ani.

revealed a normal clitoris, labia majora and labia minora. There was a depression 2 cm. in depth where the vagina normally is located. The anal orifice was situated 1.5 cm. below the rudimentary introitus. Two fingers readily passed into this opening, and there was no evidence of a sphincter muscle. Approximately 1.5 cm. below the anus there was a small dimple with radial skin folds resembling somewhat the skin folds of the normal

SUMMARY OF CASE

A white girl aged 17 years, single, was admitted to the Vanderbilt University Hospital outpatient department Sept. 9, 1943, complaining of amenorrhea. She reported that for the previous eighteen months she had dull aching pains in the lower part of the abdomen lasting one or two days and occurring at intervals of one to two months. She stated that she expected to menstruate at these times but had never had a vaginal flow.

The only other complaint was intermittent incontinence of feces.

A general physical examination revealed that the patient was well developed and had normal secondary sex characteristics. Mammary development was compatible with her age. Axillary and pubic hair was normal in amount and distribution. Examination of the genitalia

From the Department of Obstetrics and Gynecology, Vanderbilt University School of Medicine.

1. Berman, J. K.: Congenital Anomalies of the Rectum and Anus, *Surg., Gynec. & Obst.* 66: 11-22 (Jan.) 1938.

2. Chandler, L. R.: Congenital Malformations of the Rectum and Anus: Their Surgical Treatment, *California & West. Med.* 51: 84-91 (Aug.) 1939.

3. Crowell, E. A., and Dulin, J. W.: Congenital Anomalies of the Anus and Rectum, *Surgery* 7: 529-539 (April) 1940.

4. David, V. C.: The Treatment of Congenital Openings of the Rectum into the Vagina—Atresia Ani Vaginalis, *Surgery* 1: 163-168 (Feb.) 1937.

5. Baldwin, J. F.: Formation of an Artificial Vagina by Intestinal Transplantation, *Am. J. Obst.* 56: 636-640, 1907.

6. Wharton, L. R.: A Simple Method of Constructing a Vagina, *Ann. Surg.* 107: 842-854 (May) 1938.

7. Frank, R. T.: Evaluation of Treatment for Absent Vagina, *J. Mount Sinai Hosp.* 7: 259-262 (Jan.) 1941.

anus. This dimple was surrounded by a subcutaneous firm structure which was apparently an anal sphincter. The patient was able to contract the muscle voluntarily on instruction.

It was evident that she had a congenital absence of the vagina and an ectopic anus.

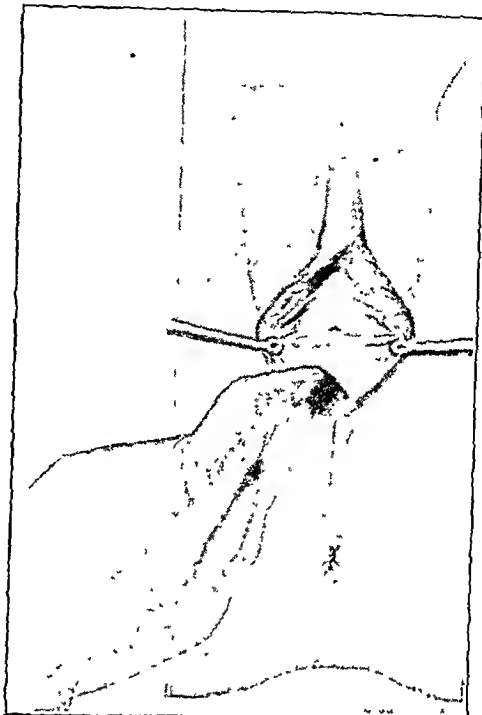


Fig. 2.—Vulva and perineum after transplantation of rectum.

Examination by rectum did not reveal the presence of internal genitalia, although the apparent presence of ovarian tissue was exemplified by her well developed secondary sex characteristics.

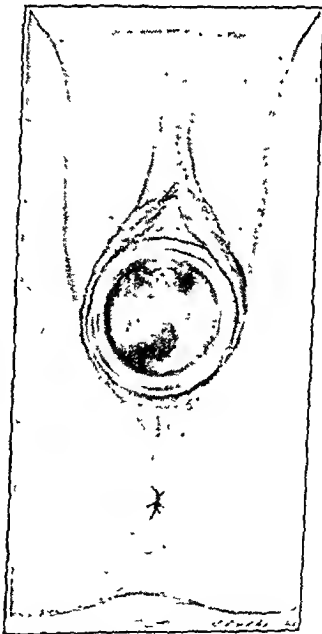


Fig. 3.—Vulva and perineum after final operation. The artificial vagina is distended with a glass dilator.

On admission of the patient to the Vanderbilt University Hospital several diagnostic studies were made. A pneumoperitoneum followed by x-rays revealed no definite pelvic organs. An abdominal film revealed an anomaly of the lumbosacral

region with articulation of the right transverse process of the fifth lumbar vertebra with the sacrum. Intravenous pyelograms showed both kidneys functioning well, with rotation and slight hydronephrosis on the right side. Barium injected into the rectum was seen about 2 cm. from the anal dimple. There was a considerable distance, therefore, between the rectum and the anal sphincter, and not merely a thin septum.

On October 11 a plastic procedure was performed under nitrous oxide and ether anesthesia. After preliminary cleansing, the tissues about the ectopic anal orifice were infiltrated with saline solution to which epinephrine had been added to facilitate dissection. A circular incision was then made around the opening at the mucocutaneous junction. The lower 8 cm. of the rectum was freed by means of sharp and blunt dissection. Adequate mobility of the rectum was thereby obtained. The skin over the anal dimple was removed by circular excision, and a canal was made through the perineum. This canal as well as the sphincter ani muscle surrounding it was then dilated until it admitted two fingers readily. The mobilized rectum was then threaded through this canal and anchored in place by multiple interrupted fine cotton sutures. The mucosa of the rectum was then sutured to the skin by radially placed cotton sutures. Finally the perineal body was repaired by the procedure usually carried out in a routine perineorrhaphy, the levator ani muscle having been plicated in the midline. The postoperative course was relatively uneventful. The incision healed by first intention with very little discomfort. By the fifth postoperative day the patient was able to have a normal bowel movement with little distress. It was necessary to educate her in regard to sphincter control. She received succinylsulfathiazole in doses of 0.25 Gm. per kilogram of body weight every twenty-four hours for six days prior to operation and for five days afterward. We are convinced that the use of this drug materially reduces the incidence of postoperative infection in surgery of the rectum.⁸

The patient was readmitted to the hospital five months later. At this time the anal sphincter control was still complete and her general condition was good.

On May 13, 1944, under nitrous oxide and ether anesthesia a transverse incision was made in the apex of the vaginal dimple. A cavity was then created by means of sharp and blunt dissection between the urethra and the rectum extending back to the peritoneum of the cul-de-sac of Douglas. Examination revealed no evidence of a cervix or uterine fundus. Little bleeding occurred. A 10 by 4 cm. cottonwood vaginal plug covered by rubber tissue was then placed in the newly created vagina and an indwelling catheter left in situ.

Six hours after operation the patient spontaneously expelled the wooden plug. She was again anesthetized and the cavity examined. Considerable bleeding occurred and it seemed advisable to pack the cavity and to secure hemostasis before the obturator was reapplied. After sixty hours it was reinserted and left in place for three weeks. A considerable amount of purulent drainage occurred about the plug, and the patient developed a mild cystitis. The infection responded promptly following administration of sulfadiazine. When the plug was removed at the end of three weeks, three fourths of the newly created vagina was epithelized.

The floor of the urethra near the meatus was destroyed as a result of pressure of the cottonwood plug. Nevertheless the patient had complete urinary control. A large glass vaginal dilator was left in the vagina almost constantly during the ten days during which she remained in the hospital. At the time of dismissal a completely epithelized vagina extending back to the cul-de-sac and 3.5 cm. in diameter was present. There had been no tendency to contracture. She was instructed to use the dilator for the greater part of each day for at least six more weeks.

CONCLUSIONS

In a patient presenting a combination of congenital anomalies, the method for eradicating the perineal anus and establishing

8. Poth, E. J., and Knotts, F. L.: Succinylsulfathiazole: A New Bacteriostatic Agent Locally Active in the Gastrointestinal Tract, *Proc. Soc. Exper. Biol. & Med.* 48:129-130 (Oct.) 1941.

the normal anatomic relationship of the sphincter muscle to the anal orifice was completely satisfactory.

The use of the Wharton operation in the production of an artificial vagina seems a safe and relatively simple procedure. This method eliminates the dangers inherent in the more complicated operations.

Council on Foods and Nutrition

The Council has authorized the following report for publication.

GEORGE K. ANDERSON, M.D., Secretary.

THE ADDITION OF SYNTHETIC VITAMINS TO CONFECTIONERY

It is well known that several vitamins can now be manufactured on a huge industrial scale. This has made possible the current enrichment program by which wheat flour and bread are made the carriers of such important dietary factors as thiamine, riboflavin and niacin. It has also precipitated much discussion concerning the limits to which such addition of vitamins to foods should be carried. This discussion has been summarized elsewhere and therefore need not be reviewed in detail here.¹ Let it suffice to point out that at this date the opinions of this Council, the Food and Nutrition Board of the National Research Council and the Food and Drug Administration of the federal government have crystallized, so to speak, in favor of the appropriate enrichment of flour and bread (and perhaps other cereal products) with several factors and the fortification of milk with vitamin D, of table fats with vitamin A and of table salt with iodine. To what extent other additions will finally acquire widespread acceptance and then official approval only time and the accumulation of new data can determine.

Sugar, candy and sweetened carbonated beverages present another problem. Evidence can be cited in support of the view that the consumption by the American people of such a highly purified carbohydrate as cane sugar is so high as to be of some public health concern. The nutritional aspects of this problem have already been discussed by this council² and therefore need no extended comment here. It is pertinent, however, to point out that in its resolution on the general problem of the addition of vitamins and minerals to foods the Food and Nutrition Board of the National Research Council used in item 7 of the resolution the following words: "7. That, specifically, the Committee opposes the addition of synthetic vitamins to carbonated beverages and confectionery."

A product called Vi-Chocolin has been submitted to the Council for possible acceptance. This product consists of a mixture of such customary candy ingredients as cane sugar, vegetable lecithin, chocolate flavor and vanillin. Vitamins are added from other sources to provide each bar with the minimum daily adult requirements of the several vitamins for which minimum requirements are stated, in amounts as follows:

Vitamin A.....	4,000 U. S. P. units
Vitamin B ₁ (thiamine).....	1 mg.
Vitamin B ₂ (riboflavin).....	2 mg.
Vitamin C (ascorbic acid).....	30 mg.
Vitamin D (viosterol).....	400 U. S. P. units

It is evident that Vi-Chocolin is essentially a multivitamin chocolate coated candy bar, offered ostensibly as a specialty product of high nutritive value and of some use in medicine, but in reality intended for promotion to the public as a general purpose confection, a vitaminized candy. Vi-Chocolin therefore falls in the class of products which do not conform to the principles followed by the Council in dealing with enriched or fortified foods and therefore cannot be considered for the Seal.

1. Cowgill, G. R.: Improving the Quality of Cheap Staple Foods, chapter XVI in *Handbook of Nutrition*, Chicago, American Medical Association, 1942.

2. Council on Foods and Nutrition: Some Nutritional Aspects of Sugar, Candy and Sweetened Carbonated Beverages, *J. A. M. A.* 120: 763 (Nov. 7) 1942.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - CHICAGO 10, ILL.

Cable Address - - - "Medic, Chicago"

Subscription price - - - - Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, FEBRUARY 10, 1945

CANCER OF THE CERVIX

In a review of cancer of the cervix Block¹ emphasizes that the best results in the treatment of the disease are obtained when it is diagnosed in its early stage. Most authorities agree that the absolute diagnosis of cervical cancer must depend on the microscopic examination, usually of a biopsy specimen. The iodine test of Schiller is useful in determining the suspicious areas in the cervix which should be subjected to biopsy. This test is based on the fact that the upper layers of the normal epithelium of the portio and the vagina contain rich masses of glycogen, which disappear when the epithelium becomes cornified or changed by cancer. In the normal living tissue the glycogen of the upper layers is stained a deep mahogany brown in a few seconds by Lugol's solution. A superficial area of early cancer, being devoid of glycogen, does not receive the stain and stands out startlingly white or pink against the deeply colored background of normal tissue. The test is completely reliable when it is clinically negative, that is, when all the tissues take the stain; therefore the test is specific in the absence of cancer. However, Block points out that the test is of little or no value in the presence of ulceration, erosion or chronic cervicitis.

Novak considers both the test and the use of the colposcope as of rather limited value. Neither procedure is of the kind which can be expected to achieve adoption by the general profession. The chief value of the Schiller test is to indicate the proper points for biopsy, though in a great majority of these cases, as pointed out by Block, the suspicious areas are apparent enough, sometimes pathetically so.

The study of vaginal smears as a means of early diagnosis of cervical or uterine cancer was advocated by Papanicolaou.² Cervical cancer is revealed in vaginal smears by the appearance of characteristic cells derived from the superficial layers of the tumor, which undergo

continual desquamation. These cells show great variety of form and size, much greater than that seen in sections of the tumor. The most characteristic feature of the abnormal cells is the atypical form and structure of their nuclei and vacuolization of the cytoplasm. A commonly found, characteristic cell type is an extremely elongated one resembling a smooth muscle fiber. Erythrocytes are generally found in large numbers. Block warns, however, that a positive diagnosis from a vaginal smear does not indicate immediate radical intervention or irradiation but rather that confirmatory biopsies of the cervix or endometrium should be performed.

Meigs and Jaffe have found in their analysis of the survival rates of patients undergoing irradiation that most of the deaths occur in the first two years and that most patients without obvious disease at the end of two years have a good chance for recovery. They conclude that it is only necessary to follow the cases for three years following treatment, and then by deducting 15 per cent the five year end results can be predicted. Therefore it is unnecessary to wait for five years following treatment before reporting a group of cases or to change a method of treatment. Kimbrough and Tompkins found that 23.3 per cent of the patients survived five or more years and that 18.7 per cent of the original group lived more than ten years after treatment.

One could cite numerous statistics favoring either radiotherapy or operation. Each method has its advantages as well as disadvantages. While the application of radium is a comparatively simple procedure many complications may occur. Most important is infection developing during the process of irradiation, the 2 per cent mortality charged against this procedure being due almost exclusively to the activation of hemolytic streptococci. The Ruge-Philipp test is of considerable value in avoiding this dangerous complication. Formidable complications may arise from irradiation injury to the intestine ranging from simple acute proctosigmoiditis to severe ulcerations of the bowel, leading in a small percentage of cases to perforation into the peritoneal cavity, causing peritonitis, into the vagina, producing rectovaginal fistulas, or into the perirectal tissues, giving rise to ischio-rectal abscesses. Colostomy is frequently necessary, especially if stenosis, hemorrhage or severe pain is a prominent symptom.

According to Block there is a tendency toward the resumption of operative treatment. In Bonney's series of 500 Wertheim operations the operative mortality rate was 14 per cent and was largely due to shock. In about 40 per cent of the cases the regional lymph nodes were involved, and in these the five year cure rate was only 23 per cent, as opposed to the cases free from lymph node involvement, in which the cure rate reached 58 per cent. The operative mortality was only 10 per cent in the lymph node free cases as against 20 per cent for

1. Block, Frank B.: Cancer of the Cervix, *Am. J. M. Sc.* 208:794 (Dec.) 1944.

2. Vaginal Smears and Carcinoma of the Uterus, editorial, *J. A. M. A.* 124: 1136 (April 15) 1944.

the lymph node involved group. Meigs gives five reasons why he has resumed the operative treatment of cervical cancer: 1. If the cervix has been removed there is no chance for a recurrence in it. 2. If the cervix has been removed, no cervical cancer can regrow in it as a recurrence. 3. Certain cancers of the cervix are radiation resistant. 4. There will be less damage to the bowel. 5. From the work of Bonney and Taussig it is obvious that patients with lymph node metastases can be cured by surgery. In some instances it is not possible to cure with radiation cancer in lymph nodes deep in the pelvis. The surgery must be limited to certain types of patients; ideally they should be thin, young and in good health and have an early growth.

The most significant complications of operative therapy are difficulties with the urinary tract. Cystitis, dilated ureters and hydronephroses are the rule after operation. In about 5 per cent of the cases urinary fistulas develop, which in all cases mean ultimate nephrectomy.

The experience of the patients who have had both methods of treatment has always been that the surgery was much easier to tolerate than the radiation. For over ten years Taussig has practiced the removal of the iliac lymph nodes in addition to irradiation of the primary tumor in group 2 cancer of the cervix and has done 175 of these operations. The percentage of five year survival in his series was over 15 per cent better in patients who had the additional procedure of the removal of iliac lymph nodes.

MALNUTRITIONAL IMMUNITY TO VIRUS DISEASES

In 1942 Foster and her associates¹ of the Department of Pediatrics, University of Pennsylvania, found that a deficiency of thiamine increases the normal resistance of mice to inoculations of the virus of poliomyelitis. The incubation period is shorter and the incidence of paralysis and death rate are much less than in control mice maintained at the optimum level of thiamine. They subsequently found that a similar increase in antiviral resistance resulted from a mere restriction of food intake or from a restriction in the carbohydrate fraction only while maintaining the normal intake of all other components.² At about the same time similar findings were reported by Rasmussen and his colleagues³ of the University of Wisconsin, who found that the decrease in susceptibility to poliomyelitis noted in mice on diets of restricted caloric value is less accentuated than that observed in mice which are deficient in thiamine. The malnutritional immunity was

demonstrated with both the Theiler's virus and the Lansing strain of poliomyelitis.

On account of the wartime interest in nutritional deficiencies, Foster and her group⁴ attempted a careful confirmation of the reported relative immunologic effects of vitamin B₁ deficiency and restricted food intake. They used carefully paired litter mates inoculated intracerebrally with the same dose of the Lansing virus. Two hundred mice were used in their titrations. These were divided into four groups of 50 mice each, the 4 animals from each litter being of the same sex. One group of 50 mice was fed ad libitum a restricted diet containing as little as 30 to 40 micrograms of thiamine per hundred grams. A second group was given an adequate diet containing 100 micrograms of thiamine per hundred grams, the amount of food eaten from day to day by this group being restricted to the daily food intake of group 1. In other groups the caloric intake was restricted without reduction in the intake of thiamine or other essential factors.

In all cases the onset of symptoms and deaths from paralysis occurred earlier in the adequately fed control group than with the deficiency animals. For example, by the eleventh day eighteen deaths occurred in the adequately fed group while there was but one death in the thiamine deficient group and but five deaths in the group with restricted caloric intake. Similar differences were recorded till the end of the experiment (twenty-eight days).

As previously reported by Rasmussen, a slightly greater number of deaths occurred in the low caloric group than with the thiamine deficient animals. Vitamin B₁ deficiency therefore apparently furnished a greater increase in normal antiviral resistance than that afforded by restricted food intake. Rasmussen also found that if thiamine deficient survivors are subsequently given adequate thiamine they often became paralyzed after a prolonged incubation period. This also was confirmed.

Malnutritional immunity is not limited to the poliomyelitis virus. As early as 1911 it was noted that undernourished chickens are practically immune to the Rous sarcoma virus.⁵ Subsequently it was found that diets restricted in such essential components as proteins, vitamins, minerals or fats inhibit the formation of both spontaneous and induced tumors in mice.⁶ Rabbits on a starvation diet are more resistant to vaccinia virus than adequately fed controls.⁷ Probably, therefore, malnutritional immunity is a phenomenon applicable to a wide range (possibly to all) virus diseases.

No adequate theory has thus far been developed to account for this apparent paradox: a malnutritional immunity to virus diseases coupled with a hyper-susceptibility to bacterial infections.

1. Foster, Claire; Jones, J. H.; Henle, Werner, and Dorfman, Frieda: *Proc. Soc. Exper. Biol. & Med.* 51: 215 (Nov.) 1942.

2. Foster, Claire; Jones, J. H.; Henle, Werner, and Dorfman, Frieda: *J. Exper. Med.* 79: 221 (Feb.) 1944.

3. Rasmussen, A. F., Jr.; Waisman, H. A.; Elvehjem, C. A., and Clark, P. F.: *J. Infect. Dis.* 74: 41 (Jan.-Feb.) 1944.

4. Foster, Claire; Jones, J. H.; Henle, Werner, and Dorfman, Frieda: *J. Exper. Med.* 80: 257 (Oct.) 1944.

5. Rous, Peyton: *J. Exper. Med.* 13: 397, 1911.

6. Tannenbaum, Albert: *Am. J. Cancer* 38: 335 (March) 1940.

7. Sprunt, D. H.: *J. Exper. Med.* 75: 227 (March) 1942.

Current Comment

PEPTIC ULCERATION IN GASTRIC CARCINOMA

Ulceration apparently of peptic nature is not infrequent in gastric carcinoma.¹ At times such ulceration may present many features characteristic of simple ulcer, including reparative processes. Carefully studied cases of this nature have been reported recently by Eusterman,² Palmer and Humphreys³ and others. In each of Eusterman's 5 cases a small carcinoma, roentgenologically indistinguishable from simple ulcer, apparently healed completely under intensive medical treatment. The 4 cases described in detail by Palmer and Humphreys simulated simple ulcer in many respects at the same time as they presented diagnostic signs of carcinoma. In these cases the ulcers had the morphologic characteristics of simple ulcer with more or less well defined repair of the defects and carcinomatous infiltration of the walls. In none of these cases was there definite clinical evidence of preexisting simple ulcer. The cases mentioned illustrate difficulties in the way of prompt differentiation of simple and carcinomatous gastric ulcer. As emphasized by Palmer and Humphreys there appears to be "a mechanism by which the clinical symptoms, the roentgen evidence and the gastroscopic evidence of a gastric neoplasm may all disappear." The possibility must be kept in mind that under certain circumstances gastric carcinoma may respond so favorably to treatment that its true nature is not suspected as early as it should be.

BRITISH EXPERIENCE IN THE TREATMENT OF HYPERTHYROIDISM WITH THIOURACIL

Nussey¹ treated 27 unselected cases of hyperthyroidism with thiouracil for three weeks to twelve months. The results were favorable in all the cases save 1 of long standing. In the light of present experience Nussey regards it a safe working rule to give 0.2 Gm. of thiouracil three times daily for three to five weeks, when the amount should be reduced gradually and maintained at the lowest level compatible with the patient's well being. He urges that all patients so treated be kept under adequate supervision, also that all patients suffering from hyperthyroidism be treated with thiouracil. As it was as recently as in 1943 that Astwood² made the first clinical trial with thiouracil, it is not yet possible to tell whether a medical treatment of hyperthyroidism has been introduced that will replace the surgical. Fortunately, a safe basis seems to have been established for continued observations on the curative action of thiouracil.

1. Mallory, T. B.: Carcinoma in Situ of the Stomach and Its Bearing on the Histogenesis of Malignant Ulcers, *Arch. Path.* 30: 348 (July) 1940.
2. Eusterman, G. B.: Carcinomatous Gastric Ulcer: Misleading Results of Medical Therapy, *J. A. M. A.* 18: 1 (Jan. 3) 1942.

3. Palmer, W. L., and Humphreys, E. M.: Gastric Carcinoma: Observations on Peptic Ulceration and Healing, *Gastroenterology* 3: 257 (Oct.) 1944.

1. Nussey, A. M.: Treatment of Hyperthyroidism with Thiouracil, *Brit. M. J.* 2: 745 (Dec. 9) 1944.

2. Astwood, E. B.: Treatment of Hyperthyroidism with Thiourea and Thiouracil, *J. A. M. A.* 122: 78 (May 8) 1943.

INSULIN SHOCK THERAPY

The aim of the study¹ by the Temporary Commission on State Hospital Problems was to evaluate the effectiveness of insulin shock therapy in the treatment of patients with dementia precox. Of 2,004 studied, 1,128 were treated with insulin at Brooklyn State Hospital between Jan. 1, 1937 and June 30, 1942. The remaining 876, admitted to other Metropolitan State Hospitals during the same period, who did not receive any form of shock therapy but were as nearly comparable as possible with the insulin treated patients, were used as a control group. The criteria used for measuring the effectiveness of insulin shock therapy were the subsequent ability of patients to leave the hospital and return to their homes, the length of hospital stay before leaving, the length of time patients were able to remain at home and the extent to which they were restored to usefulness. The study showed that, as a group, the insulin treated patients did better in all respects than the nontreated patients. Thus 79.5 per cent of the insulin treated patients were able to leave the hospital as against 58.8 per cent of the nontreated group. The insulin treated patients had a consistently larger proportion able to leave the hospital than the nontreated patients. The difference was especially evident among the paranoics, 79.4 per cent as against 59.0 per cent. Among the insulin treated patients the hospitalization period prior to release was 3.8 months shorter per patient than among the nontreated. Among the patients with subsequent hospitalization the insulin treated patients spent an average of two months more at home than in the hospital, while the nontreated patients spent seven and one-half months more in the hospital than at home, constituting a saving of nine and one-half months of hospitalization per insulin treated patient. At the end of this study, between five and one-half years and six months after release of all the insulin treated patients 58.9 per cent were at home as against 44.0 per cent of the nontreated group. There was a consistently larger proportion of insulin treated patients in the higher levels of usefulness. A larger proportion of insulin treated patients returned to gainful employment as compared with the nontreated group, 71.1 per cent and 60.6 per cent respectively. The insulin treated group had a consistently larger proportion of patients who were doing well and as well as or better than they did before their illness, regardless of the time which elapsed between their release and the date of study. Insulin treatment has effected a saving of approximately 286,695 days of hospital care, a saving of approximately \$80,274.60 in cost of food and clothing and substantial, though undetermined, saving in maintenance costs and a still larger saving ultimately in construction costs. The determination that the highest percentage of improvement occurred among those in whom the illness was of short duration might be utilized in achieving even better results with insulin therapy if a technique could be established that would more certainly identify patients in the early stages of the illness than is now possible.

1. Insulin Shock Therapy, Study by the Temporary Commission on State Hospital Problems, 105 East 22d Street, New York 10, 1944.

MEDICINE AND THE WAR

ARMY

CONVALESCENT SOLDIERS GIVEN PRETECHNICAL TRAINING

The War Department recently announced that pretechnical training in the arts and trades will be offered by the Quartermaster Corps as part of the conditioning of soldiers in convalescent hospitals. The courses will include canvas and leather work, sewing machine operation, clothing and textile repair, electrical work, topographic drawing, warehousing and utility repair. The training will be part of the current Army Medical Department program to recondition hospitalized soldiers for a return to service or for reentry into civilian life. The program also includes physical and educational reconditioning, occupational therapy and recreation. According to the Office of the Surgeon General, the program has resulted in a sharp decrease in army discharges due to disability. Approximately 12,000 men are being sent back to full duty each week, and the time of hospitalization has been reduced as much as one third.

ARMY APPOINTS RECRUITING COORDINATOR

The War Department recently announced the appointment of Miss Evelyn Blewett as civilian consultant to Major General Norman T. Kirk, Surgeon General of the Army, on the Army Nurse procurement and public relations program. Miss Blewett, who has handled such successful campaigns as the Wave Recruiting Campaign for the Navy and the "Food Fights for Freedom" program, will coordinate the procurement program with such other agencies as the Office of War Information, the Red Cross, the National Nursing Council for War Service, the Army's Recruiting Publicity Bureau, and the War Manpower Commission. She will continue to act as staff manager for the War Advertising Council in this emergency campaign.

DEAFNESS AMONG SOLDIERS

Cases of deafness among soldiers which were not detected at their induction are now being detected through the modern scientific methods in use by the Army Medical Department. Those with heretofore undetected deafness as well as those with service incurred deafness are being rehabilitated at Deshon General Hospital, Butler, Pa., Hoff General Hospital, Santa Barbara, Calif., and Borden General Hospital, Chickasha, Okla. To provide hearing aid sooner for the deaf, earpieces to which the aid may be fastened are now being manufactured in the three hospitals, in this way overcoming the delay incident to packing and transmitting to manufacturers the cast for the earpieces, as well as for their return by mail.

COLONEL SIGAFOOS APPOINTED DEPUTY DIRECTOR

Lieut. Col. Rolland B. Sigafos, formerly of Tacoma, Wash., who was recently awarded the Legion of Merit (*THE JOURNAL*, January 27, p. 225), has been appointed deputy director of the Training Division, Operations Service, Office of the Surgeon General. Colonel Sigafos replaces Lieut. Col. Charles H. Moseley, assigned overseas.

ARMY HOSPITALS CONSOLIDATE

AAF Regional Station Hospital No. 1, consisting of the Casa Loma Hotel and Miami Biltmore Hotel, Coral Gables, Fla., and the AAF Convalescent Hospital, Miami Beach, Fla., have been consolidated and designated Army Air Forces Regional and Convalescent Hospital, Miami Area, Miami Beach, Fla.

ARMY AWARDS AND COMMENDATIONS

Captain Bradley C. Brownson

The Air Medal was recently awarded to Capt. Bradley C. Brownson, former fellow in surgery in the Mayo Foundation, for "meritorious achievement while participating in aerial flight during the period Jan. 17, 1944 to April 6, 1944." The citation read, in part, "In order that he might better acquaint himself with the special problems of the combat crews to study their reactions in face of danger and the fatigue factors involved, Capt. Bradley C. Brownson (formerly of Rochester) as flight surgeon of a medium bombardment squadron (in the central Pacific area) voluntarily participated in six combat strike sorties over heavily defended enemy held bases, during which time he was subjected to the dangers of enemy antiaircraft fire and probable fighter opposition." Dr. Brownson graduated from Tulane University of Louisiana School of Medicine, New Orleans, in 1937 and entered the service Aug. 15, 1941.

Captain Samuel Hurwitz

Capt. Samuel Hurwitz, formerly of Fall River, Mass., was recently awarded the Bronze Star Medal. The citation accompanying the award read "for heroic achievement in action on July 17, 1944 in France. When one of the battery positions of his battalion was subjected to heavy enemy shelling, Captain Hurwitz, battalion surgeon, immediately proceeded to the vicinity and began to render medical attention to the wounded. Despite the fact that more than twenty enemy shells landed in his battery's position during a period of forty-five minutes, Captain Hurwitz, completely disregarding his own safety, continually exposed himself to this enemy shell fire as he organized the first aid, rendered immediate medical attention to the wounded and caused their evacuation. The courage and devotion to duty displayed by Captain Hurwitz reflected credit on himself and the military service. Dr. Hurwitz graduated from the University of Toronto Faculty of Medicine in 1931 and entered the service Aug. 12, 1942.

Major John H. Grindlay

Major John H. Grindlay, former fellow in surgery at the Mayo Foundation and chief of professional medical services at McGuire General Hospital, Richmond, Va., has been awarded the Bronze Star Medal. The citation read, in part, "Major Grindlay with other United States military personnel and a number of civilians assisted in the destruction of military installations and equipment of benefit to the enemy and withdrew with General Stilwell from Burma to India. The trek was made on foot across mountains, jungle terrain and monsoon swollen streams. Major Grindlay's endurance, cheerfulness and concern for the welfare of other members of his party contributed much to the successful completion of this march." Dr. Grindlay graduated from Harvard Medical School, Boston, in 1935 and entered the service Nov. 25, 1940.

Captain Emanuel Sprei

The Bronze Star Medal was recently awarded to Capt. Emanuel Sprei, formerly of New York, accompanied by the citation "for meritorious service in connection with military operations against an enemy of the United States in France during the period July 29, 1944 to Oct. 31, 1944. He has repeatedly established his aid station immediately behind the front lines, thereby expediting the treatment and evacuation of the wounded. His professional knowledge and untiring efforts have enabled his medical detachment to function with precision and dispatch." Dr. Sprei graduated from the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, in 1938 and entered the service Feb. 20, 1942.

NAVY

COMMISSIONING OF MEDICAL AND DENTAL STUDENTS

Commissioning of medical and dental students in the V-12 Program who are under 21 years of age at the time of their graduation from professional school is defined in a recent release (Navy V-12 Bulletin No. 273) issued by the Bureau of Naval Personnel, Washington, D. C., as follows:

As a result of the accelerated academic programs for medical and dental students in the Navy V-12 Program, it is anticipated that a limited number of such men will complete the requirements for graduation from medical or dental schools prior to their having attained the age of 21. As the laws of practically all the states require that applicants for license to practice medicine and dentistry be 21 years of age, it is considered highly desirable that such a requirement be maintained by the Medical Department of the Navy.

Therefore, in the event that a medical or dental student in the Navy V-12 Program completes his professional academic training before he attains the age of 21, he will be commissioned as Ensign H(P) (probationary) on graduation and will be assigned to active duty under the cognizance of the Bureau of Medicine and Surgery or, at his request, he may be released from active duty status until he has reached the age of 21. The services of such Ensigns H(P) assigned to active duty in the Navy will be utilized in laboratory work or in other duties not involving actual medical or dental treatment until they become 21 years of age, at which time they will be eligible for appointment as Lieutenants (jg), (MC), U. S. Naval Reserve, or Lieutenants (jg), (DC), U. S. Naval Reserve, and assignment to intern training or to general duty.

At the time recommendations for appointment to commissioned status on completion of requirements for graduation from medical or dental schools are forwarded in conformance with the requirements of reference (a), the commanding officer should recommend any man who will not have reached his twenty-first birthday for appointment as Ensign H(P) rather than Lieutenant (jg) (MC) or (DC) and, if the student wishes to exercise the privilege of requesting inactive duty, such written request will be forwarded by the commanding officer to this bureau via the Bureau of Medicine and Surgery.

NAVY AWARDS AND COMMENDATIONS

Lieutenant Robert Moore Smith Jr.

Lieut. Robert Moore Smith Jr., formerly of Louisville, Ky., was recently awarded the Bronze Star. The citation read "for meritorious performance of duty as a company medical officer of the Second Beach Battalion during the assault of France, June 6, 1944. Lieutenant Smith, under heavy gunfire, repeatedly exposed himself to administer to the wounded and, without regard for his personal safety, supervised the evacuation of wounded from his section of the beach. His courage and devotion to duty were an inspiration to all officers and men having contact with him. The skill and professional ability displayed by Lieutenant Smith, under most trying conditions, were in keeping with the best traditions of the United States naval service." Dr. Smith graduated from Washington University School of Medicine, St. Louis, in 1940 and entered the service Feb. 8, 1943.

Lieutenant Commander Ralph Chandler Parker Jr.

Lieut. Comdr. Ralph Chandler Parker Jr., formerly of Batavia, N. Y., was recently awarded the Bronze Star. The citation reads "for meritorious service as Senior Medical Officer attached to the U. S. S. *Arkansas* prior to and during the invasion of the coast of France on June 6, 1944. Skilled and tireless in the performance of duty, Lieutenant Commander Parker achieved exceptional success in training the personnel of the Medical Department for the prompt and expert care and treatment of casualties brought aboard during assault operations.

His outstanding professional integrity and devoted efforts were responsible for the saving of many lives and in keeping with the highest traditions of the United States Naval Service." Dr. Parker graduated from Harvard Medical School, Boston, in 1937 and entered the service July 2, 1938.

Lieutenant Walter George Epply

Posthumous award of the Silver Star was recently made to Lieut. Walter George Epply, formerly of Manchester, N. H. The citation accompanying the award read "for conspicuous gallantry and intrepidity as officer in charge of the medical section of a beach party during the assault on enemy Japanese held Asan Point, Guam, Marianas Islands, on July 21, 1944. Landing with his medical section on a beach subjected to heavy and persistent enemy mortar and shellfire, Lieutenant Epply immediately located a suitable site and directed the establishment of his medical station. Completely disregarding his own personal safety and exposing himself continuously to terrific hostile fire, he skilfully rendered aid to the many casualties on the beach until he was killed while administering plasma to a wounded Marine, whose life was saved as a result of the prompt and vital treatment. Lieutenant Epply's heroic conduct and self-sacrificing efforts on behalf of his comrades were an inspiration to his corpsmen and in keeping with the highest traditions of the United States Naval Service. He gallantly gave his life for his country." Dr. Epply graduated from McGill University Faculty of Medicine, Montreal, in 1941 and entered the service Aug. 22, 1942.

Captain Bernard S. Pupek

The Legion of Merit was recently awarded to Capt. Bernard S. Pupek, formerly of Arlington, N. J. The citation read "For exceptionally meritorious conduct in the performance of outstanding services to the government of the United States as medical officer on the staff of Commander Amphibious Force, United States Atlantic Fleet, and later on the staff of a major task force commander during the landings in French Morocco. Charged with the difficult assignment of preparing thorough casualty evacuation plans in coordination with army medical authorities, Captain Pupek worked untiringly in providing loaded transports, shipborne landing craft and beach parties with adequate medical facilities and personnel to care for the wounded. By his sound judgment and outstanding initiative in organizing, training and directing the operations of the various assault unit medical departments, he contributed materially to the efficient and expeditious handling of casualties during the large scale amphibious attacks in this vital war area." Dr. Pupek graduated from New York University College of Medicine, New York, in 1925 and was commissioned a lieutenant (jg) in June of that year.

Captain Brython P. Davis

A letter of commendation was recently presented to Capt. Brython P. Davis, formerly of Washington, D. C., which reads "Your performance of duty over a period of thirty months as medical officer in command of a base hospital, Northern Ireland, has been brought to my attention. During your tour of duty the hospital and all of its facilities has been opened to the officers and men of all the Allied Forces as well as to our own. Not only were the ills of the patients treated skilfully, but you and your staff contributed materially to the creation of most cordial relations with the members of all Allied forces. For your leadership, tact, application of technical knowledge and skill, and steadfast devotion to duty you are hereby commended. This commendation carries with it the privilege of wearing the commendation ribbon." Dr. Davis graduated from the University of California Medical School, San Francisco, in 1916 and entered the service Aug. 29, 1917.

Lieutenant (jg) John L. Paladino

The Navy and Marine Corps Medal was recently bestowed on Lieut. (jg) John L. Paladino, formerly of Brooklyn. The citation read "for heroic conduct in caring for the survivors of the U. S. S. LST 314 subsequent to the sinking of that vessel."

on June 9, 1944. Although he himself was wounded and suffering from shock and prolonged exposure, Lieutenant, Junior Grade, Paladino promptly organized first aid parties aboard the rescue vessel and, working tirelessly and with expert professional skill for a period of eight hours, attended the survivors of his ship until he was satisfied that all possible medical aid had been rendered. His unselfish efforts and valiant devotion to duty under extremely difficult conditions were in keeping with the highest traditions of the United States Naval Service." Dr. Paladino graduated from St. Louis University School of Medicine in 1936 and entered the service in September 1943.

Lieutenant Roddie Lesley Stewart

Lieut. Roddie L. Stewart, formerly of Pell City, Ala., was recently awarded the Bronze Star for meritorious service as headquarters battalion surgeon during the attack on Saipan. The citation stated that he landed "during heavy artillery and mortar barrage and established and operated an aid station by means of which many casualties were cared for and evacuated." Dr. Stewart graduated from the University of Tennessee College of Medicine, Memphis, in 1934 and entered the service in August 1942.

Lieutenant Commander Ernest N. Neber

The Navy and Marine Corps Medal was recently awarded to Lieut. Comdr. Ernest N. Neber, formerly of Centralia, Ill. The citation read "for heroic conduct while serving as flight surgeon with a Marine fighter squadron on the occasion of an explosion at an advanced naval base in the Solomon Islands area on Sept. 4, 1943. When a large aerial bomb exploded and overturned a nearby truck, Lieutenant Commander (then Lieutenant) Neber unhesitatingly rushed to the aid of three men in the cab of the burning vehicle. Lifting him out of the compartment while ammunition from the gun pans of four blazing planes exploded around him, he carried an unconscious and badly burned victim to the safety of a revetment, where he skillfully administered emergency treatment. Seconds after he effected his daring and gallant rescue, a gasoline truck exploded and completely demolished the four planes and the overturned vehicle. Lieutenant Commander Neber's professional integrity and fearless devotion to duty, maintained at great personal risk, undoubtedly saved the life of a man who otherwise might have perished and were in keeping with the highest traditions of the United States Naval Service." Dr. Neber graduated from Hahnemann Medical College and Hospital of Philadelphia in 1936 and entered the service July 1, 1944.

MISCELLANEOUS

WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

Vaughan General Hospital, Hines, Ill.: Virus and Rickettsial Diseases: Medical and Neurologic Diseases and Treatment, Dr. Thomas Francis Jr., February 16; Psychosomatic Medicine, Drs. David Slight and Lewis J. Pollock, February 28.

Station Hospital, Dow Field, Bangor, Maine: Joint Injuries, Drs. G. E. Haggart and Hugh F. Hare, February 20.

Dispensary, U. S. Naval Air Station, Brunswick, Maine: Fractures of Extremities, Dr. Russell F. Sullivan, February 15. Station Hospital, Fort Williams, Portland, Maine: The Use of Penicillin and the Sulfa Drugs, Dr. Cutting B. Favour, February 15.

Regional Hospital, Waltham, Mass.: The Pneumonias and Other Respiratory Infections, Dr. Francis C. Lowell, February 15.

U. S. Naval Hospital, Chelsea, Mass.: The Psychoneuroses and Their Management, Dr. Abraham Myerson, February 15.

Lovell General Hospital, Fort Devens, Mass.: Pilonidal Sinus and Common Diseases of the Anus and Rectum, Dr. E. Parker Hayden, February 15.

Cushing General Hospital, Framingham, Mass.: Blood Dyscrasias and Transfusions, Dr. William B. Castle, February 15.

Station Hospital, Camp Myles Standish, Taunton, Mass.: Diarrheal Diseases, Dr. Ralph E. Wheeler, February 15.

U. S. Marine Hospital, Brighton, Mass.: The Skin, Dr. Bernard Appel, February 15.

U. S. Naval Convalescent Hospital, Springfield, Mass.: Burns and Reconstruction Surgery, Drs. John A. Reidy and John Langohr, February 15.

Dispensary, U. S. Naval Construction Training Center, Davisville, R. I.: Peripheral Vascular Disease, Dr. Robert R. Linton, February 15.

U. S. Naval Hospital, Newport, R. I.: Acute Abdominal Emergencies, Dr. Richard B. Cattell, February 15.

Station Hospital, Bradley Field, Windsor Locks, Conn.: The Skin, Dr. Maurice J. Strauss, February 15.

Naval Submarine Base, New London, Conn.: Chest and Abdominal Injuries, Drs. R. Glen Urquhart and George H. Gildersleeve, February 15.

Induction Center, Grand Central Palace, New York: Clinical Implications in the Newer Knowledge of the Shock Syndrome, Dr. Samuel Standard, February 23.

A. A. F. Langley Field, Virginia: Arteriovenous Fistula, Dr. William B. Porter, February 23; Common Peripheral Nerve Lesions and Technic of Repairing Large Nerve Defects, Capt. Benjamin B. Whitcomb, February 23.

Ashford General Hospital, White Sulphur Springs, W. Va.: Treatment of Patients with Paraplegia Due to War Injuries, Dr. Donald Munro, February 20.

Percy Jones General and Convalescent Hospital, Battle Creek, Mich.: Recent Advances in Virus and Rickettsial Diseases, Capt. Arthur W. Frisch, February 19; Surgical Diseases of the Stomach, Dr. Warren H. Cole, February 26.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, February 3, page 282)

ARKANSAS

Baptist State Hospital, Little Rock. Capacity, 340; admissions, 9,018. Mr. John G. Dudley, Administrator (intern, April 1).

CALIFORNIA

Mount Zion Hospital, San Francisco. Capacity, 193; admissions, 5,333. Dr. J. A. Katzive, Director (resident—roentgenology).

CONNECTICUT

Meriden Hospital, Meriden. Capacity, 177; admissions, 3,802. Dr. Herbert T. Wagner, Director (interns, July 1).

MASSACHUSETTS

St. Joseph's Hospital, Lowell. Capacity, 175; admissions, 4,358. Sister St. Philip, R.N., Administrator (interns). Worcester Hahnemann Hospital, Worcester. Capacity, 151; admissions, 4,457. Miss Erna M. Kuhn, R.N., Superintendent (2 interns, 2 residents).

MISSOURI

St. Mary's Hospital, Kansas City. Capacity, 182; admissions, 5,785. Sister Mary Liberala, R.N., Superintendent (1 intern now, 3 July 1).

NEW YORK

St. Francis Hospital, New York City. Capacity, 441; admissions, 6,788. Dr. John Dornig, Director (interns).

OHIO

Fairview Park Hospital, Cleveland. Capacity, 201; admissions, 6,170. Rev. Philip Vollmer Jr., Superintendent (2 interns, July 1). Lutheran Hospital, Cleveland. Capacity, 160; admissions, 4,525. Mr. Lee S. Lanpher, Superintendent (intern, July 1).

PENNSYLVANIA

Northeastern Hospital, Philadelphia. Capacity, 102; admissions, 2,453. Mr. Charles H. Dabbs, Administrator (2 interns).

WISCONSIN

State of Wisconsin General Hospital, Madison. Capacity, 772, admissions, 12,682. Dr. H. M. Coon, Superintendent (resident—medicine; resident—ophthalmology-otolaryngology).

ORGANIZATION SECTION

THE PHYSICIAN'S FEDERAL INCOME TAX

PREPARED BY BUREAU OF LEGAL MEDICINE AND LEGISLATION, AMERICAN MEDICAL ASSOCIATION

On or before March 15, federal income taxpayers must do three things: (1) They must file their final returns for the year 1944; (2) they must file declarations of estimated tax for 1945; (3) they must pay the unpaid part, if any, of the tax that was unabated for 1942 or 1943, as the case may be.

WHO MUST FILE RETURNS

A tax return must be filed by every citizen or resident of the United States whose total gross income in 1944 was \$500 or more. Joint returns may be filed by a husband and wife if (1) they were married at the end of the year and (2) both were citizens or residents of the United States. Such a joint return may be filed even though one spouse had neither income nor deductions.

WHO MUST FILE DECLARATION OF ESTIMATES

In addition to filing the return for 1944, certain taxpayers must file on or before March 15 a declaration of estimated tax for 1945. Such a declaration must be filed by a taxpayer if—

(1) his gross income from wages can reasonably be expected to exceed the sum of \$5,000 plus \$500 with respect to each surtax exemption, except his own; or

(2) his gross income from sources other than wages can reasonably be expected to exceed \$100 for 1945 and his gross income to be \$500 or more.

A taxpayer may, if necessary, file one or more amended declarations during the year but only one in each calendar quarter. The last such amended declaration must be filed on or before Jan. 15, 1946.

The estimated tax is payable quarterly as it was in 1944, the final payment becoming due Jan. 15, 1946.

TAX RATES AND EXEMPTIONS

The victory tax has been eliminated and the normal rate reduced from 6 per cent to 3 per cent. The surtax rate begins at 20 per cent on the first \$2,000 of surtax net income and increases in rate for incomes in the higher brackets.

For the normal tax an exemption of \$500 is allowed each taxpayer, irrespective of the number of dependents or marital status. If a joint return is filed by husband and wife the exemption normally is \$1,000. If, however, the adjusted gross income of one spouse is less than \$500 the exemption claimable on the joint return is \$500 plus the amount of that adjusted gross income. For the surtax, exemptions are in the amount of \$500 each for the taxpayer, for his or her spouse and for each dependent whose gross income was under \$500. In prior years the personal exemption allowed a married couple could be taken in full on a joint return or on separate returns could be taken by either or divided between them in any desired proportion. This division can no longer be done.

The determination of whether a taxpayer is single or married is to be made as of the last day of the taxable

year. There is no status determination date for dependents, the test being whether the taxpayer furnished over half of the support. The requirement previously obtaining that the dependent must either be under 18 years of age or incapable of self support because of some mental or physical defect has been eliminated.

The earned income credit of 10 per cent, claimable in connection with the normal tax in prior years, has been eliminated. A special exemption is made available to taxpayers who are in the armed forces which will be discussed later.

GROSS AND ADJUSTED GROSS INCOMES

Gross Income.—A physician's gross income is the total amount of money received by him during the year for professional services, regardless of the time when the services were rendered for which the money was paid, assuming that the return is on a cash receipts and disbursements basis, plus such money as he has received from investments and from other sources.

If a physician receives a salary as compensation for services rendered and in addition thereto living quarters or meals, the value to the physician of the quarters and meals so furnished ordinarily constitutes income subject to tax. If, however, living quarters or meals are furnished for the convenience of the employer, the value thereof need not be computed and added to the compensation otherwise received by the physician. As a general rule, the test of "convenience of the employer" is satisfied if living quarters or meals are furnished to a physician who is required to accept such quarters and meals in order to perform properly his duties. For example, if a physician employed by a hospital is subject to immediate service at any time during the twenty-four hours of the day and therefore cannot obtain quarters or meals elsewhere without material interference with his duties and on that account is required by the hospital to accept the quarters or meals furnished by it, the value thereof need not be included in the gross income of the physician.

Adjusted Gross Income.—Adjusted gross income is defined to mean gross income minus—

(1) deductions attributable to a trade or business carried on by the taxpayer, if such trade or business does not consist of the performance of services by the taxpayer as an employee;

(2) expenses of travel, meals and lodging while away from home, paid or incurred by the taxpayer in connection with the performance by him of services as an employee;

(3) certain reimbursed expenses in connection with employment;

(4) deductions attributable to property held for the production of rents or royalties;

(5) depreciation or depletion allowed a life tenant of property or to an income beneficiary of property held in trust; and

(6) losses from the sale or exchange of property.

The adjusted gross income is to be used as a basis to determine (1) the limitation on the deduction for charitable contributions (15 per cent of the adjusted

gross income), (2) the amount of the deduction for medical expense (excess over 5 per cent of adjusted gross income), (3) the amount of the optional standard deduction the taxpayer may elect to take (10 per cent of adjusted gross income in certain income brackets), (4) exemptions in certain cases where joint returns are filed by husband and wife, as previously pointed out, and (5) if the taxpayer may take advantage of the optional tax table devised for incomes under \$5,000.

OPTIONAL TAX TABLE

If a taxpayer has an adjusted gross income of less than \$5,000, he may if he so elects compute his tax using the optional or alternative tax table. This table allows for the normal tax and surtax exemptions and for nonbusiness deductions approximating 10 per cent of the adjusted gross income. The election may be exercised irrespective of the source of the income. This table may not be used if the adjusted gross income of the taxpayer is \$5,000 or more but in such cases an optional flat \$500 deduction may be claimed in lieu of nonbusiness deductions generally, such as charitable contributions, interest and taxes. Such a taxpayer may elect to exercise this option or he may itemize such deductions as in prior years. The taxpayer who reports an adjusted gross income of less than \$5,000 a year will not be allowed the standard deduction as a separate item. Its benefits may be obtained only by using the optional tax table, which, as already indicated, assumes that the user of the table is entitled to a deduction approximating 10 per cent of his adjusted gross income.

PHYSICIANS IN SERVICE

The fact that a physician is in service does not of itself excuse a failure to file a return or declaration. It is understood, however, that if because of the inaccessibility of the necessary records a physician in service is unable to file a complete return he may file a tentative return on which he must estimate his income, deductions and tax as best he can and indicate on the return his reasons for following the procedure. At a later date, if that procedure is followed, a complete return must be filed and necessary adjustments in tax will be made. What has just been said relates to physicians in service who are stationed in this country.

If a physician in service is on duty outside the United States, no income tax will become due, generally speaking, until the fifteenth day of the fourth month following the month in which the physician ceases, except by reason of death or incompetence, to be a member of the military forces on sea duty or in service outside the continental United States, or the fifteenth day of the third month following the month in which the present war is terminated, whichever may be the earlier. When a physician in service returns to the United States, he should contact his local collector of internal revenue and make arrangements to bring his returns up to date.

The law provides a special exemption for members of the armed forces in addition to the personal exemption. The first \$1,500 of the service pay of members of the armed forces, including commissioned officers, is non-taxable. Other service pay, however, must be reported as income. Commutation of quarters and rental value of quarters occupied by medical officers are not taxable income; neither is mustering out pay.

If the ability of physicians in service to pay income taxes is materially affected by such service, payment

of the tax falling due before or during the service may be deferred for a period extending not more than six months after the termination of service. This deferment is authorized by section 513 of the Soldiers' and Sailors' Civil Relief Act of 1940 and applies to all members of the Army, Navy, Marine Corps and Coast Guard and to all officers of the United States Public Health Service detailed for duty either with the Army or with the Navy, on active duty or while undergoing training or education under the supervision of the United States preliminary to induction into service. This deferment is not automatic. The taxpayer must present evidence to show that his ability to pay is materially impaired by reason of military service. Proof of that impairment should be submitted at the time the tax is due, on a form procurable at the offices of the several collectors of internal revenue.

Any tax owed by a member of the military or naval forces who dies in service will be canceled, this relief being retroactive to Dec. 7, 1941. If the tax has already been assessed at the time of the death of the person in service it will be abated. If the tax has already been collected it will be refunded as overpayment. This tax forgiveness applies only to income taxes and not to the estate tax.

The cost of equipment of an army officer or navy officer is deductible only to the extent that it is especially required for his profession and does not merely take the place of articles required in civilian life. The cost of uniforms is considered a personal expense and hence not deductible. The cost of gold braid and cap devices required by regulations of the Navy to be worn on the clothing of a naval officer has been held to constitute an expense necessitated by reason of his profession as an officer and to be deductible as a business expense.

DEDUCTIONS FOR PROFESSIONAL EXPENSES

A physician is entitled to deduct all current expenses necessary in carrying on his practice. The taxpayer should make no claim for the deduction of expenses unless he is prepared to prove the expenditure by competent evidence. So far as practicable, accurate itemized records should be kept of expenses and substantiating evidence should be carefully preserved. The following statement shows what such deductible expenses are and how they are to be computed:

Office Rent.—Office rent is deductible. If a physician rents an office for professional purposes alone, the entire rent may be deducted. If he rents a building or apartment for use as a residence as well as for office purposes, he may deduct a part of the rental fairly proportionate to the amount of space used for professional purposes. If the physician occasionally sees a patient in such dwelling house or apartment, he may not, however, deduct any part of the rent of such house or apartment as professional expense; to entitle him to such a deduction he must have an office there, with regular office hours. If a physician owns the building in which his office is located, he cannot charge himself with "rent" and deduct the amount so charged.

Office Maintenance.—Expenditures for office maintenance, as for heating, lighting, telephone service and the services of attendants, are deductible.

Supplies.—Payments for supplies for professional use are deductible. Supplies may be fairly described as articles consumed in the using; for instance, dressings, clinical thermometers, drugs and chemicals. Pro-

professional journals may be classified as supplies and the subscription price deducted. Amounts currently expended for books, furniture and professional instruments and equipment, "the useful life of which is short," generally less than one year, may be deducted, but if such articles have a more or less permanent value, their purchase price is a capital expenditure and is not deductible.

Equipment.—Equipment comprises property of a more or less permanent nature. It may ultimately wear out, deteriorate or become obsolete, but it is not in the ordinary sense of the word "consumed in the using."

The cost of equipment such as has been described, for professional use, cannot be deducted as expense in the year acquired. Examples of this class of property are automobiles, office furniture, medical, surgical and laboratory equipment of more or less permanent nature, and instruments and appliances constituting a part of the physician's professional outfit, to be used over a considerable period of time, generally over one year. Books of more or less permanent nature are regarded as equipment and the purchase price is therefore not deductible.

Although the cost of such equipment is not deductible in the year acquired, nevertheless it may be recovered through depreciation deductions taken year by year over its useful life, as described later.

No hard and fast rule can be laid down as to what part of the cost of equipment is deductible each year as depreciation. The amount depends to some extent on the nature of the property and on the extent and character of its use. The length of its useful life should be the primary consideration. The most that can be done is to suggest certain average or normal rates of depreciation for each of several classes of articles and to leave to the taxpayer the modification of the suggested rates as the circumstances of his particular case may dictate. As fair, normal or average rates of depreciation, the following have been suggested: automobiles, 25 per cent a year; ordinary medical libraries, x-ray equipment, physical therapy equipment, electrical sterilizers, surgical instruments and diagnostic apparatus, 10 per cent a year; office furniture, 5 per cent a year.

The principle governing the determination of all rates of depreciation is that the total amount claimed by the taxpayer as depreciation during the life of the article, plus the salvage value of the article at the end of its useful life, shall not be greater than its purchase price. The physician must in good faith use his best judgment and claim only such allowance for depreciation as the facts justify. The estimate of useful life, on which the rate of depreciation is based, should be carefully considered in each individual case.

Medical Dues.—Dues paid to societies of a strictly professional character are deductible. Dues paid to social organizations, even though their membership is limited to physicians, are personal expenses and not deductible.

Postgraduate Study.—The Commissioner of Internal Revenue holds that the expense of postgraduate study is not deductible.

Traveling Expenses.—Traveling expenses, including amounts paid for transportation, meals and lodging, necessarily incurred in professional visits to patients

and in attending medical meetings for a professional purpose, are deductible.

Automobiles.—Payment for an automobile is a payment for permanent equipment and is not deductible. The cost of operation and repair, and loss through depreciation, are deductible. The cost of operation and repair includes the cost of gasoline, oil, tires, insurance, repairs, garage rental (when the garage is not owned by the physician), chauffeur's wages, and the like.

Deductible loss through depreciation of an automobile is the actual diminution in value resulting from obsolescence and use and from accidental injury against which the physician is not insured. If depreciation is computed on the basis of the average loss during a series of years, the series must extend over the entire estimated life of the car, not merely over the period in which the car is possessed by the present taxpayer.

If an automobile is used for professional and also for personal purposes—as when used by the physician partly for recreation, or so used by his family—only so much of the expense as arises out of the use for professional purposes may be deducted. A physician doing an exclusive office practice and using his car merely to go to and from his office cannot deduct depreciation or operating expenses; he is regarded as using his car for his personal convenience and not as a means of gaining a livelihood. What has been said in respect to automobiles applies with equal force to horses and vehicles and the equipment incident to their use.

MISCELLANEOUS

Contributions to Charitable Organizations.—For detailed information with respect to the deductibility of charitable contributions generally, physicians should consult the official return blank or obtain information from the collectors of internal revenue or from other reliable sources. Attention is called to the change in the law that applies to deductions for charitable contributions, namely, that an individual taxpayer can deduct such contributions only to the extent that they do not exceed 15 per cent of his adjusted gross income. The physician may not deduct as a charitable contribution the value of services rendered an organization operated for charitable purposes.

Bad Debts.—Physicians who make their returns on a cash receipts and disbursements basis, as most physicians do, cannot claim deductions for bad debts.

Taxes.—Taxes generally, either federal or state, are deductible by the person on whom they are imposed by law. Both real and personal property taxes are deductible; but so-called taxes, more properly assessments, paid for local benefits, such as street, sidewalk and other like improvements, imposed because of and measured by some benefit inuring directly to the property against which the assessment is levied, do not constitute an allowable deduction from gross income. Physicians may deduct state gasoline taxes and state sales taxes. In some states sales taxes are imposed on the seller, but, if they are passed on to the buyer, the latter may deduct them.

State income and use taxes are deductible; federal income taxes are not. Federal import, excise or stamp taxes are deductible only to the extent that they are attributable to business activities. This represents a change in the law applicable to 1944 and subsequent taxes. State automobile license fees are deductible. If a state or local fee is imposed for regulatory purposes,

and not to raise revenue, the fee may not ordinarily be deducted as a tax. If such fees, however, are classifiable as a business expense, they are deductible as such. Annual registration fees imposed on physicians probably come within the category of regulatory fees and should be deducted as a business expense rather than as taxes. Local and state occupational taxes imposed on physicians are deductible either as taxes or as a business expense, depending on the purpose for which the tax is imposed.

The excise taxes imposed on employers by section 804, title VIII, and section 901, title IX, of the Social Security Act, commonly referred to as old age and unemployment benefit taxes, are deductible annually by employers in computing net income for federal income tax purposes. If the taxpayer's return is made on a cash basis, as are the returns of practically all physicians, the taxes are deductible for the year in which they are actually paid. If the return is made on an accrual basis, the taxes are deductible for the year in which they accrue, irrespective of when they are actually paid. Employees, including physicians whose employment brings them within that category, may not deduct the tax imposed on them by section 801, title VIII, of the Social Security Act, generally referred to as the old age benefits tax. If, however, the employer assumes payment of the employee's tax and does not withhold the amount of the tax from the employee's wages, the amount of the tax so assumed may be deducted by the employer, not as a tax paid but as an ordinary business expense.

Medical Expense.—A taxpayer may deduct amounts expended for medical, dental and hospital care for himself, his spouse or a dependent, not compensated for by insurance or otherwise, including amounts paid for accident and health insurance, according to a prescribed formula. Deductions will be permitted to the extent that such expenses exceed 5 per cent of the adjusted gross income of the taxpayer but not in excess of \$2,500 in case of a taxpayer with more than one surtax exemption, or \$1,250 in case of a taxpayer with only one surtax exemption.

Laboratory Expenses.—The deductibility of the expenses of establishing and maintaining laboratories is determined by the same principles that determine the deductibility of corresponding professional expenses. Laboratory rental and the expenses of laboratory equipment and supplies and of laboratory assistants are deductible when under corresponding circumstances they would be deductible if they related to a physician's office.

Losses by Fire or Other Causes.—Loss of and damage to a physician's equipment by fire, theft or other cause, not compensated by insurance or otherwise recoverable, may be computed as a business expense and is deductible, provided evidence of such loss or damage can be produced. Such loss or damage is deductible, however, only to the extent to which it has not been made good by repair and the cost of repair claimed as a deduction.

Insurance Premiums.—Premiums paid for insurance against professional losses are deductible. This includes insurance against damages for alleged malpractice, against liability for injuries by a physician's automobile while in use for professional purposes, and against loss from theft of professional equipment and damage to or loss of professional equipment by fire or otherwise.

Under professional equipment is to be included any automobile belonging to the physician and used for strictly professional purposes.

Expense in Defending Malpractice Suits.—Expense incurred in the defense of a suit for malpractice is deductible as a business expense.

Sale of Spectacles.—Oculists who furnish spectacles, etc., may charge as income money received from such sales and deduct as an expense the cost of the article sold. Entries on the physician's account books should in such cases show charges for services separate and apart from charges for spectacles, etc.

Official Notes

DOCTORS LOOK AHEAD

The American Medical Association and the National Broadcasting Company are presenting the twelfth consecutive season of nationwide network health broadcasts weekly from January 6 to June 30, 1945. Included in the series are broadcasts relating to wartime and postwar developments, with special emphasis on medical progress of the present day and what it foreshadows for the nation's health in the immediate future.

Topics in the series, which is called *Doctors Look Ahead*, will be announced weekly in *THE JOURNAL* and monthly in *Hygeia*. Fast moving events may, however, cause last minute substitutions. Local newspapers should be consulted for announcements of time and stations. The program will be broadcast each Saturday at 4 p. m. Eastern War Time (3 p. m. Central, 2 p. m. Mountain and 1 p. m. Pacific War Time). When conflicts exist with local programs, rebroadcast may be arranged at hours other than on the network schedule. The next three topics are:

- February 10. Heart Surgery (Dr. Edwin P. Jordan).
- February 17. Refrigeration Anesthesia.
- February 24. Discharged Soldier.

The broadcast will be under the supervision of the Bureau of Health Education, whose director, Dr. W. W. Bauer, will summarize each program except when another speaker is announced.

Medical Legislation

MEDICAL BILLS IN CONGRESS

Change in Status.—H. R. 1752 has passed the House, proposing a mobilization of civilian manpower. When this bill was being discussed on the floor of the House, Representative Edwin Arthur Hall, New York, submitted an amendment proposing that registered male nurses performing duties comparable to the duties performed by members of the Army Nurse Corps female or the Navy Nurse Corps female, when inducted into the armed forces, shall be inducted only as commissioned officers. A point of order against the amendment was sustained.

Bills Introduced.—S. Res. 62, submitted by Senator Pepper, Florida, proposes a continuation during the Seventy-Ninth Congress of the studies and surveys made by the Pepper Subcommittee on Wartime Health and Education and an additional \$25,000 to cover the expenses of the subcommittee. H. R. 1812, introduced by Representative Andrews, New York, proposes to authorize an award of merit for uncompensated personnel of the Selective Service System, including local board examining physicians and dentists and members of medical advisory boards. H. R. 1820, introduced by Representative Coffee, Washington, proposes a federal appropriation of \$18,000,000 for the fiscal year ending June 30, 1945 to enable the states to provide medical care for recipients of public assistance. Thereafter, the bill provides, a sum will be appropriated for each fiscal year sufficient to carry out the purposes of the bill. H. R. 1832,

introduced, by request, by Representative Kilburn, New York, proposes to provide pension, compensation or retirement pay of not exceeding \$20 per month to all veterans without dependents while being furnished hospitalization by the United States or any political subdivision.

THE HILL-BURTON BILL

In the discussion of the Hill-Burton bill which was published in *THE JOURNAL*, January 27, page 231, regarding allotments of funds to the states for surveys and development of programs, it was emphasized that the bill did not contain any specific provision for advice from the Federal Advisory Council as far as these allotments are concerned. The bill does provide, however, that allotments for construction and administrative expenses are to be made under regulations promulgated by the Surgeon General of the United States Public Health Service on "recommendation of the Federal Advisory Council, and after consultation with the agencies designated in accordance with section 622 (a) (2)" of the bill.

STATE LEGISLATION

Arkansas

Bill Introduced.—S. 58 proposes that an action against a physician, dentist or hospital for malpractice, error, mistake or failure to treat or cure must be commenced within two years after the cause of action accrues.

California

Bills Introduced.—S. 160 proposes to enact a separate naturopathic practice act and to create an independent board of naturopathic examiners to examine and license applicants for licenses to practice naturopathy, defined in the bill as "the treatment of the sick and afflicted by the use of such substances as light, air, water, clay, heat, rest, diet, herbs, electricity, massage, Swedish movements, suggestive therapeutics, magnetism, physical and mental culture." S. 183 proposes to permit the formation of local hospital districts and to authorize the establishment, organization and operation of public hospitals in such districts. S. 219 proposes to authorize associations duly licensed by the state department of public welfare to enter into contracts with subscribers to pay for medical and hospital services to be rendered by hospitals and by licensed physicians. Such an association may consist of physicians or lay corporations formed for such purposes. A. 111 proposes that osteopathic practitioners be embraced within the term "physician" as used in the law conditioning the issuance of a license to marry on the presentation by each party to the proposed marriage of a physician's certificate that the party is free from stated venereal diseases. A. 112 proposes that chiropractors be embraced within the term "physician" within the meaning of the law that limits the retail sale of venereal prophylactics to sale on the prescription of a licensed physician. A. 128 and A. 420 propose to prohibit the state department of social welfare from adopting or enforcing any rule or regulation the operation of which results in discrimination against practitioners of any branch of the healing arts. A. 236, to supplement the medical practice act, proposes to permit certain chiropractors to be issued physician's and surgeon's certificates after successfully passing examinations in biochemistry, advanced bacteriology and pathology, surgery, materia medica, pharmacology and therapeutics, general medicine, and advanced obstetrics and gynecology. Such chiropractors, after being issued physician's and surgeon's certificates, are to respond only to the board of chiropractic examiners in such proceedings to revoke or suspend their licenses as may be instituted in the future. A. 449, A. 800 and A. 1200 propose to establish varying systems of compulsory health insurance. A. 637 proposes to add to the Health and Safety Code a division 22 entitled "Hypnotic Drugs," which proposes to prohibit the sale or distribution of any hypnotic drug except on the written prescription of a licensed physician, dentist, chiropodist or veterinarian. Hypnotic drug is defined to mean "veronal, barbital (acid diethylbarbituric) or other barbituric acid derivative, demerol, mescaline, acetylurea, paraldehyde, chloral hydrate, hydantoin, sulfonated methanes, or their salts, derivatives or compounds of the foregoing substances, or any preparation containing any of the foregoing substances, or their

salts, derivatives or compounds, amphetamine, its salts or other compounds, or any preparation containing any amphetamine." A. 653, to amend the laws restricting the distribution and possession of narcotic drugs, proposes so to define narcotic drugs as to include "veronal, barbital (acid diethylbarbituric) or other barbituric acid derivative, demerol, mescoline, acetylurea, paraldehyde, hydantoin, sulfonated methanes, or their salts, derivatives or compounds of the foregoing substances, or any preparation containing any of the foregoing substances, or their salts, derivatives or compounds, amphetamine, its salts or other compounds, or any preparation containing any amphetamine excepting inhalers denatured to be unfit for internal use."

Connecticut

Bills Introduced.—S. 32 proposes to authorize the establishment and operation of a state hospital for inebriates. S. 84 proposes so to amend the charter of the Connecticut State Medical Society as to make the members of the council of the society members of its house of delegates. S. 129 proposes to prohibit the use of the roentgen ray, the x-ray or radium for the therapeutic or cosmetic treatment of another person except either by or under the prescription, direction or supervision of a licensed physician, osteopath or dentist. H. 188 proposes to require the department of health to cause to be printed and mailed by June 1 annually a list of all registered practitioners of medicine, midwifery, chiropractic, osteopathy, naturopathy, chiropody, nursing or physiotherapy. The present law requires such a list to be printed and distributed prior to March 1. H. 193, to amend the narcotic drug act, proposes so to define the term "narcotic drugs" as to include isonipocaine, which is defined as "the substance identified chemically as 1-methyl-4-phenyl-piperidine-4-carboxylic acid ethyl ester, or any salt thereof by whatever trade name identified."

Georgia

Bill Introduced.—H. 94 proposes to enact a new vital statistics law providing for the compulsory registration of births, stillbirths and deaths and to require the registration of foundlings.

Illinois

Bills Introduced.—H. 23 proposes to authorize the furnishing at public expense of chiropractic and osteopathic treatment to persons receiving old age pension grants from the state. H. 24 proposes to appropriate \$342,000 to the Medical Center Commission created by the act approved June 4, 1941 in relation to the establishment of a medical center district in Chicago.

Indiana

Bills Introduced.—H. 73 proposes to create in cities of the first class having a population of more than 300,000 a department of public health and hospitals and a public health and hospitals district, apparently designed to operate public hospitals in the area involved. H. 143, to supplement the medical practice act, proposes to abolish the state board of medical registration and examination and to transfer its powers, duties and functions to a board of medical registration and examination of Indiana, which the bill proposes to create. The new board is to consist of five nonsectarian physicians, one osteopath and one chiropractor. H. 180 proposes so to amend the narcotic drug act as to include within the regulations imposed thereby isonipocaine.

Iowa

Bills Introduced.—S. 55 and H. 80, to amend the laws relating to the issuance of licenses to practitioners of the healing art and allied vocations, proposes to make it a ground for the revocation of such licenses for the holders thereof to quote a guaranty, price, terms or other special inducement prior to consultation. The bill proposes, however, that the provisions just referred to shall not apply to barbers, cosmetologists, pharmacists or embalmers. S. 128, to amend the law authorizing the establishment of corporations to operate nonprofit hospital service plans, proposes also to authorize such corporations to contract to furnish medical and surgical services to subscribers and to contract for the furnishing of such services with physicians and osteopaths.

Kansas

Bill Introduced.—S. 23 proposes to repeal the laws regulating the manufacture, sale, prescribing or possession of narcotic drugs and to enact what appears to be the uniform narcotic drug act.

Maine

Bills Introduced.—S. 65 proposes to expand the definition of the practice of chiropractic to include treatment by hydrotherapy or diet. S. 66 proposes to authorize any member of the Maine state chiropractors' association or any licensed chiropractor to use the title "Doctor" or the letters "Dr." to his name when accompanied by the word "Chiropractor." S. 67 proposes to require applicants for licenses to practice chiropractic to be examined, in addition to the subjects now enumerated in the law, in electrotherapy, hydrotherapy and dietetics. H. 155 proposes to require applicants for licenses to practice chiropractic to have completed a course in chiropractic schools of four school years of not less than nine months each and of a total of 3,600 school hours. The present law requires completion of a course of four school years of not less than six months each and of a total of 2,600 sixty minute school hours. H. 156 proposes that the certificate issued a successful applicant for a license to practice chiropractic shall designate the holder as a doctor of chiropractic, chiropractor or chiropractic physician. The present law specifically only requires the license to designate the holder as a doctor of chiropractic. H. 147, to amend the workmen's compensation act, proposes to authorize a chiropractor to furnish the medical care that an employer is required to furnish an injured workman.

Maryland

Bill Introduced.—H. 149 creates in the state board of health a Bureau of Medical Services which is to administer a program of medical care in the state for indigent and medically indigent persons. The bureau is authorized to contract with physicians, dentists and hospitals for the necessary medical, surgical and hospital treatment of eligible persons.

Missouri

Bill Introduced.—H. 79 authorizes the state commissioner of health to distribute to local health officers and health boards antitoxin and other biologic products and to process and distribute to such agencies blood plasma.

Montana

Bill Introduced.—H. 42 proposes to authorize the state health department to obtain, process and distribute blood plasma.

Nebraska

Bills Introduced.—Bill 112 proposes to require every licensed chiropractor in the state to attend not less than three days annually such "scientific" clinics, forums or chiropractic educational study as may be approved by the state examining board in chiropractic as a prerequisite for the annual renewal of his or her license. Bill 113 proposes to amend the definition of an accredited school of chiropractic within the meaning of the chiropractic practice act. Such a school, among other things, the bill proposes, must conduct a clinic for patients in which students regularly participate; it must give instruction in anatomy, orthopedics, physiology, embryology, chemistry, pathology, hygiene and sanitation, bacteriology, symptomatology, histology, spinal analysis, diagnosis, principles and practices of chiropractic, including palpation, nerve tracing and adjusting, and especially require clinical instruction in the last three named subjects of no less than four hours per week during the last two terms of instruction; and it must require an actual attendance of four college years totaling not less than four thousand hours.

Nevada

Bill Introduced.—A. 20 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a certificate of a licensed physician, based on examination and a standard serologic test made not more than thirty days prior to the date of the application, that the party either is not infected with syphilis or if so infected is not in a stage of that disease that is or may become communicable to the marital partner.

New Hampshire

Bill Introduced.—H. 77 proposes apparently to condition employment in a restaurant on the possession of a physician's certificate that the holder thereof is not afflicted with tuberculosis, venereal disease in a communicable state or with any other communicable disease.

New Mexico

Bill Introduced.—H. 21 proposes to exempt from the provisions of the emergency school tax act fees and charges made by hospitals, physicians, osteopaths, chiropractors or dentists for care rendered the sick or disabled.

New York

Bills Introduced.—S. 212 proposes that if a patient in any public hospital needs blood transfusions it shall be the duty of the responsible hospital administrator without delay to provide such transfusions, if obtainable. If the patient is unable to pay therefor, the bill proposes that the state reimburse the hospital for the cost thereof. S. 217, to amend the workmen's compensation act, proposes to authorize an injured employee when dental care is required to select any dentist authorized to do so to treat him. S. 258 and A. 610 propose to make a hospital bill, certified to by a hospital superintendent admissible in evidence and prima facie evidence of the facts therein contained, subject, however, to rebuttal. A. 342 proposes to require every physician to report to designated health authorities every case of infantile paralysis under his care. S. 515 and A. 434 propose that, on the refusal of any person suspected of being infected with venereal disease to submit to the required examination or to permit specimens of blood or bodily discharges to be taken for laboratory examination or to comply with the restrictions imposed by quarantine, the appropriate officer may apply to the court for an order compelling compliance, and the court is to be empowered to enter such an order. The bill further proposes to make the duty of appropriate boards of health to provide adequate facilities for the free diagnosis and treatment of persons living within its jurisdiction infected or suspected of being infected with venereal disease. S. 372 and A. 445 propose that the provisions of the law prohibiting the handling of live pathogenic micro-organisms or viruses, other than vaccine virus, except by licentiates of the state commissioner of health or the city commissioner of health of New York City, shall not apply to diseased tissue, exudate or other specimens which are sent by physicians to laboratories for examination as an aid in the diagnosis or control of disease. S. 445 and A. 548 propose so to amend the unemployment compensation act as to include within its provisions persons employed in the preparation and/or handling of food for human consumption in hospitals, educational institutions and religious institutions. S. 476 proposes to establish a system of compulsory health insurance. A. 372, to amend the law according liens to hospitals on claims or recoveries of patients, proposes that the lien shall be exclusive of personal services rendered by a physician.

North Dakota

Bills Introduced.—S. 57 and S. 58 proposes so to amend the narcotic drug act as to include within the regulation imposed thereby isonipecaine. S. 64 proposes to prohibit any person from engaging in the business of a nonprofessional nurse or from acting as a nonprofessional nursing attendant, auxiliary worker, subsidiary worker or vocational nurse or from caring for the sick for hire without first being licensed by the state board of nurse examiners. To be qualified for a license an applicant must be 20 years or older, be of good moral character, be in good physical and mental health, possess at least an eighth grade education, have successfully completed an accredited course for the training of practical nurses and be a citizen of the United States.

Oregon

Bill Introduced.—H. 53 proposes to require boards of directors of school districts to provide programs of health instruction and physical education for elementary and high school pupils.

Oklahoma

Bill Introduced.—H. 164 proposes to authorize the state commissioner of health to quarantine, isolate and confine any person whom he finds to be infected with any kind of venereal disease.

Pennsylvania

Bills Introduced.—H. 54 proposes to authorize the various professional licensing boards of the commonwealth to revoke or suspend the license of any physician, osteopath, veterinarian, pharmacist or registered nurse who has pleaded guilty, entered a plea of nolo contendere or who has been found guilty of violating any state or federal law pertaining to the sale, use or distribution of narcotics. S. 90 proposes to appropriate \$100,000 to the department of health for cancer research. S. 162 proposes to require every practicing physician to notify designated health officials of every case of tuberculosis coming under his observation. If an infected person is unable or unwilling so to conduct himself as not to expose his family or the public, appropriate courts are to be authorized to order his commitment to any approved institution established for the care of tuberculosis. H. 111 proposes to require every physician diagnosing a case of venereal disease to report the facts to the state department of health. Any infected person refusing to submit to treatment may, on application to the state department of health, be committed to an appropriate institution for treatment until the disease has been rendered noninfectious. H. 117, to amend the law conditioning the issuance to marry on the presentation by each party to the proposed marriage of a certificate of a physician licensed in Pennsylvania that the party is free from stated venereal diseases, proposes also to recognize such a certificate executed by a medical officer of the United States Public Health Service, Army or Navy. H. 191, to amend the narcotic drug act, proposes so to define the term "narcotic drug" as to include "any substance identified chemically as 1-methyl-4-phenylpiperidine-4-carboxylic acid ethyl ester or any salt or derivative thereof by whatever trade name designated or any preparation containing such substance or its salts or derivatives." H. 196, to amend the medical practice act, proposes to authorize the board of medical education and licensure to issue a temporary license to practice to a graduate of an approved medical school who has been licensed to practice in another state and who has served in the active military, naval or public health service in the present war as a commissioned medical officer. H. 246 proposes to authorize the board of medical education and licensure to license, after examination, persons to practice chiropody, defined in the bill as "the diagnosis and treatment of ailments of the human foot." Such a license does not confer the right to amputate the leg, foot or toes or to use any anesthetic other than local or to treat any constitutional disease.

South Carolina

Bills Introduced.—H. 23 proposes to authorize cities of over 70,000 to impose an occupational tax, not exceeding 20 per cent of gross income, on a person practicing any calling, business or profession within the limits of the city. Exempted, however, are teachers and ministers of the gospel. S. 49 proposes to authorize the establishment of nonprofit corporations to operate hospital service plans whereby such corporations undertake to pay for hospital care rendered by hospitals to subscribers to such plans.

South Dakota

Bills Introduced.—S. 48 and S. 107 proposes so to amend the definition of narcotic drugs within the meaning of the narcotic drug act as to include isonipocaine, which is defined as "the substance identified chemically as 1-methyl-4-phenyl-piperidine-4-carboxylic acid ethyl ester or any salt thereof, by whatever trade name identified." S. 62 proposes to prohibit the operation of any hospital, maternity home, sanatorium, rest home, nursing home, boarding home or other related institution without the possession of a license from the state board of health." S. 108 proposes to authorize the establishment of nonprofit corporations to operate hospital service plans whereby such corporations undertake to pay for hospital care rendered by hospitals to subscribers to such plans.

Washington Letter

(From a Special Correspondent)

Feb. 5, 1945.

Draft of Nurses Urged by Representative Mary T. Norton

Legislation to draft nurses for the armed forces will be supported by Representative Mary T. Norton, Democrat of New Jersey, who is chairman of the House Labor Committee. She said that the voluntary system has failed and that the need for registered nurses is too urgent to delay further in the hope that enough nurses will eventually be recruited. Hearings on the draft legislation were resumed today before the House Military Affairs Committee. Explaining her stand, Representative Norton said "The Army says it requires a draft law to assure adequate care for our wounded. That's enough for me. I've supported everything the Army and Navy have considered essential to winning this war and I'll go along with this."

Another veteran woman congresswoman, Representative Edith Nourse Rogers, Republican of Massachusetts, has introduced a bill to draft nurses under Selective Service. Her bill involves national registration of all graduate nurses between 20 and 45 and authorizes the induction of all those who are eligible if required. Drafted nurses would be commissioned as second lieutenants in the Army and ensigns in the Navy.

Representative Frances P. Bolton, Republican of Ohio, says she will support legislation to induct nurses. The Rogers bill and another seeking the same objective, introduced by Representative Andrew J. May, Democrat of Kentucky, are before the Military Affairs Committee.

Veterans Branch Raps Veterans Hospitals

A Washington branch of a veterans organization has had its criticism of Veterans Administration handling of veterans hospitals placed in the *Congressional Record*. It charges that "bureaucratic obstructionism, red tape and simple inertia" emanate from the office of veterans affairs. A spokesman said "Under the policies of General Hines many thousands of sick and disabled veterans have been deprived of urgent hospitalization and medical care. His figures show that his administration has seen fit to add only 8,404 beds to its existing facilities throughout the United States since Pearl Harbor. Nothing should be left undone to provide reasonable care for our veterans to help in their rehabilitation physically, educationally, industrially and in any other way."

Nurses Commissioned in January

A total of 1,050 nurses was commissioned in the Army Nurse Corps during January, reports Surg. Gen. Norman T. Kirk. This represents a gain of 443 appointments over December. "The total is far short of the need for additional registered nurses," General Kirk said. An average of 250 nurses leave the service monthly, largely because of physical disability, which makes a net gain for January of around 800.

Medical Wacs Enlisted to Help Nurses

To relieve the shortage of nurses in service hospitals, an enlistment program for medical Wacs has been announced. For the first time since the Women's Army Corps was created, women may now enlist for service at a particular hospital. Girls must be willing to be transferred if the need arises, and they can enlist for service in any state. General Marshall has announced that the corps needs 8,000 additional members at once.

More Medical Officers and Nurses to Be Commissioned

Interviews started today for additional medical officers and nurses to be commissioned in the Regular Corps of the Public Health Service, Surg. Gen. Thomas Parran announces. Written examinations are scheduled for April 23, 24 and 25. Medical officers will be appointed in the grades of assistant surgeon and senior assistant surgeon. Nurses will be appointed in the grades of junior assistant nurse officer, assistant nurse officer and senior assistant nurse officer.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST, SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Board Continues Case of Dr. Housman.—At a recent meeting of the state board of medical examiners the board continued until March action on the application of Nathan S. Housman, formerly of San Francisco, for restoration of his license to practice medicine. The license had been revoked after he was convicted of keeping improper narcotic records and of perjury in his testimony at the trial (*THE JOURNAL*, Dec. 13, 1941, Jan. 24, 1942 and Feb. 13, 1943, p. 530).

Dr. Hanley Resigns as Maternal and Hygiene Director.—Dr. Bernard J. Hanley, member of the Los Angeles Health Department since 1926, has resigned as director of the bureau of maternal and child hygiene of the Los Angeles City Department of Health, effective December 31, according to the *Los Angeles Times*. He has been succeeded by Dr. Samuel M. Martins, clinic supervising physician. Dr. Hanley will continue to assist the department without compensation when needed.

Personal.—Dr. Karl Ludwig Schlaupp, associate clinical professor of obstetrics and gynecology, Stanford University School of Medicine, San Francisco, was recently appointed a member of the board of education of San Francisco.—Dr. Wei Chang Chu, instructor in pharmacology, Kweiyang Medical College, arrived in San Francisco January 24 on leave for two years from the Chungking government for work in the department of pharmacology, Stanford University School of Medicine, San Francisco. Dr. Chu graduated at the Hunan-Yale Medical College in 1937.

Local Celebration of Discovery of Anesthesia.—The planting of a redwood tree and the dedication of a memorial tablet in Golden Gate Park formed a part of the celebration in San Francisco recently of the one hundredth anniversary of the discovery of anesthesia. The principal speaker at the park celebration was Chauncey D. Leake, Ph.D., dean and vice president of the University of Texas Medical Branch, Galveston, whose subject was "Horace Wells and His Contribution to Humanity." Other speakers on the program included Drs. Hubert R. Hathaway and William B. Neff, San Francisco, on "The Development of the Knowledge of Anesthetics." Dr. Leake gave a second address entitled "No More Pain." The observance was under the sponsorship of the state and local dental groups.

CONNECTICUT

Proposed Merger of New Haven and Grace Hospitals.—The proposed merger of New Haven and Grace hospitals, New Haven, was approved January 26 by the board of directors of both hospitals. Final ratification of the program rests with the Grace Hospital Society and the General Hospital Society of Connecticut, the parent associations of the units involved, newspapers reported. If the consolidation is carried out a public subscription drive for from three to four million dollars to erect and equip a new building will be a feature of the development. The proposed building, which would be erected near New Haven Hospital, would give the combined institutions a bed capacity of 850. It would be associated with the Yale University School of Medicine, it is planned, and a board of directors representing a merger of the boards of both hospitals would be entrusted with the overall supervision. The assets and liabilities of the hospitals would be pooled and endowment funds of each institution carried into a new project without sacrifice of identity or loss of the original intent of the donors. Two medical boards, operating in different spheres, will control the medical practices of the hospitals. One, representing the present staff committee of Grace Hospital and the private pavilion staff at New Haven Hospital, would govern medical practice in the new unit, which would include the new building plus a number of private and semiprivate beds in the present plant of New Haven Hospital. The other, to be appointed by the board of directors on nomination of Yale University through the school of medicine, would govern medical practice in some 350 ward beds and certain private and semiprivate beds assigned to it. All of these are now located in New Haven Hospital. Yale would

continue to contribute to the operating costs of these ward beds. These medical boards will be given the responsibility of developing medical standards and of training interns and resident staffs for their respective units. Residents and interns of both would be eligible to serve at the New Haven Dispensary. In a statement to the press endorsing the project Dr. Creighton Barker, New Haven, executive secretary of the Connecticut State Medical Society, called the development a "great forward step, in meeting the increasing demands for hospitalization and fine medical care in New Haven and surrounding territory."

ILLINOIS

Death from Toxoplasmosis.—The Illinois State Department of Public Health announced on January 27 that the first known death from toxoplasmosis in Illinois had been reported, stating that, while it is possible that other deaths from this rare disease have occurred here, this was the first official indication of its presence in Illinois. The state department indicated that toxoplasmosis will probably be made a reportable disease in Illinois in the near future.

Governor's Conference on Exceptional Children Postponed.—Plans for the third annual Governor's Conference on Exceptional Children, to be conducted by the Illinois Commission for Handicapped Children the latter part of February, have been changed in compliance with the general request recently issued by the Office of Defense Transportation. The date of the conference has been postponed, perhaps for a few months, perhaps for the duration of the war.

Health at Southern Illinois Normal.—Cold prevention week was observed on January 22-26 for the first time at the Campus Laboratory Schools, Carbondale, consisting of the Allyn Elementary School and the University High School on the campus of the Southern Illinois Normal University, as a part of the general health program carried on at the school. The Southern Illinois Normal University has had for a number of years a cold prevention program, but this is the first time the Campus Laboratory Schools have set aside a week to emphasize the event. Of 190 high school students given the patch test recently, 7 showed a positive reaction and will be given roentgenograms at the expense of the Jackson County Tuberculosis Association and local service organizations. Of 150 students who were given patch tests in the Allyn Elementary School, 10 showed positive reactions. Chest x-rays revealed 1 active case of tuberculosis.

Chicago

Lecture on Hypertension.—Dr. George E. Wakerlin, professor and head of the department of physiology, University of Illinois College of Medicine, lectured on hypertension at the Student Union Building February 2. The lecture was under the auspices of the Phi Delta Epsilon Fraternity.

Alumni Association Adopts Key.—The official key of the Alumni Association of the University of Chicago School of Medicine, recently adopted by action of the executive committee, is an adaptation of a key formerly presented to residents of Billings Hospital. The front entrance of Billings in cameo is on the presenting surface, and the reverse side bears the seal of the University of Chicago, the words "School of Medicine" and the engraved initials and graduation date.

Committee on Internships Named at University of Chicago.—A faculty committee on internships has been appointed at the University of Chicago School of Medicine to assist students in obtaining internships and residencies. Dr. Arthur C. Bachmeyer, chairman, F. Joseph Mullin, Ph.D., secretary, and Drs. Emmet B. Bay, Hilger P. Jenkins, Francis Howell Wright and J. Robert Willson are members of the committee. The facilities of the Medical Alumni Association (*THE JOURNAL*, January 27, p. 235) will be at the disposal of the committee, and Dr. Bay will act as intermediary between the association and the faculty committee. According to the *Bulletin of the Alumni Association* it is expected that the members of the association on staffs of hospitals in various parts of the country will be called on to assist in securing appointments for University of Chicago students to the best advantage of both the student and the hospital.

INDIANA

Physician Gives Library to Franklin College.—Before his death, December 10, Dr. William P. Garshwiler, Indianapolis, presented his library to Franklin College, Franklin, in memory of his wife, Florence Province Garshwiler, and her brother, Dr. Clarence Province, both of whom and Dr. Garshwiler had attended Franklin College. Dr. Province died in 1931.

Marcelle Award Goes to Mary Loveless.—The Marcelle Award with its cash prize of \$350 has been awarded to Dr. Mary E. H. Loveless, New York, by the annual forum on allergy for her attempt "to correlate thermostable antibodies with clinical results and the consequent use of 'booster doses,' which may well shorten and simplify our treatment of hay fever." The second Marcelle Prize, of \$150, went to Dr. Charles F. Code of the section on clinical physiology, Mayo Foundation, Rochester, Minn., for his "studies of the role of histamine in the production of anaphylactic and allergic reactions." Dr. Arnold R. Rich of the Johns Hopkins University School of Medicine, Baltimore, and his associates received honorable mention for their work on serum sickness and periarteritis, as did Dr. Frank A. Simon, Louisville, Ky., for his studies of the allergens in human dander.

UNRRA Takes Over World Health Duties.—The functions of the International Office of Public Health in Paris will be performed by the United Nations Relief and Rehabilitation Administration for a limited period under two sanitary conventions concerning maritime and aerial travel, it is reported. The conventions, signed by the state department January 5, will come into force when signed or acceded to by ten or more governments and will run for not more than eighteen months after they have become effective. Signature by the United States was made "subject to ratification," the *New York Times* reported. After the signature of four governments, France, Great Britain, Poland and the United States, the conventions were then left open for other signatures, after which time they were to be open to accession by any government. They amend the international maritime sanitary convention of 1926 and the international sanitary convention for aerial navigation of 1933 to confer the duties on UNRRA so that its efforts may be facilitated in the fields of displaced person and epidemic control.

Fellowships for the Training of Health Officers.—The Commonwealth Fund of New York through its division of public health is offering a group of fellowships for the training of health officers. All applicants must possess a medical degree, have had at least one year's internship and have shown ability together with interest in and aptitude for public health, with preference going to men who have had at least a few months experience in actual public health work. A total of six fellowships will be available, the stipends being distributed as follows:

Single men—\$175 to \$200 a month, depending on circumstances, plus tuition and travel from home to school, and return.

Married men—\$200 to \$250 a month, depending on individual circumstances, plus tuition and travel from home to school and return.

Application blanks and accompanying papers must be filed with the Commonwealth Fund, which reserves the right to require personal interviews if it is deemed necessary. Awards made by the fund will be subject to acceptance by the school of public health concerned. Schools at which these fellowships will be tenable are:

Johns Hopkins University School of Hygiene and Public Health, Baltimore.

School of Public Health of the University of Michigan, Ann Arbor.

DeLamar Institute of Public Health of Columbia University, New York.

Graduate School of Vanderbilt University, Nashville, Tenn.

School of Public Health of the University of North Carolina, Chapel Hill.

March of Dimes Extended.—The Miracle of Hickory.

—Because numerous motion picture houses throughout the country were closed during the March of Dimes Week, January 25-31, on account of the critical fuel situation, the campaign was extended to February 15 to permit additional contributions to the National Foundation for Infantile Paralysis. Coincident with the annual appeal for funds in various public endeavors was the release of a motion picture trailer entitled "The Miracle of Hickory," written and directed by Frank Whitbeck of the Metro-Goldwyn-Mayer Pictures, Culver City, Calif., who created all the previous March of Dime trailers. The film tells briefly the story of the poliomyelitis epidemic that struck Hickory, N. C., last summer and has been released through the National Screen Service. Greer Garson again makes her appearance in the trailer this year, having made similar successful requests in the trailers for 1943 and 1944. The picture depicts the development of the Emergency Infantile Paralysis Hospital—"The Miracle of Hickory," a small summer camp for patients, fifty-four hours later. Among others to contribute to the National Foundation for Infantile Paralysis for its quick response for aid, Dr. Carl V. Reynolds, state health officer, Dr. A. Gaither Hahn, chairman of the Catawba County chapter of the national foundation, Dr. Harold C. Whims, county health officer, Dr. Robert L. Bennett Jr., director of physical medicine at the Georgia Warm Springs Foundation, Dr. Edward A. Piszczek, Chicago, and Col. Frank Wilson, M. C., commanding officer of the Moore General

Hospital, who supplied, among other things, 40 urgently needed beds. Credit is also given to the American Red Cross and local business authorities who supplied immediate services of all types. The film shows that, when the Hickory Emergency Infantile Paralysis Hospital opened its doors fifty-four hours after the idea was conceived, workmen were still busy in one ward as the children were placed in the other. Units of the state guard voluntarily spent their Sundays working around the hospital, clearing brush from the grounds, doing odd chores; other local residents cooperated in sundry tasks; and 32 women prisoners were paroled by the governor to ease the load of hospital housework. Pictorially the film describes the great good accomplished by the annual March of Dimes of the National Foundation for Infantile Paralysis. In 1944 the national movie total for the fight against infantile paralysis was \$4,667,000. The *National Foundation News* acknowledges with thanks the efforts of Mr. Whitbeck and the cooperation of National Screen Service.

Football Fatalities.—There were 17 deaths attributed directly to football during 1944, 1 of them the first college football fatality since 1940, newspapers reported January 13. The total number was 6 more than in 1943 but was 14 under the peak of 31 in 1931, when the first of the surveys of this group of deaths was made by Frank S. Lloyd, Ph.D., then at New York University, and Fielding H. Yost of the University of Michigan, Ann Arbor. Five deaths were among players on sand lot teams, 2 on athletic club teams and 9 in high schools. The most frequent cause of death was cerebral hemorrhage. In a report to the National Collegiate Athletic Association, Floyd R. Eastwood, Ph.D., professor of physical education for men, Purdue University, Lafayette, Ind., stated that "the head still has not been adequately protected against injury in light of the continually increasing number of these injuries." The report listed halfbacks as occupying the most hazardous position. Fatalities at this spot made up 18.8 per cent of the total. Others were ends 11.7 per cent, tackles 7.4 per cent, fullbacks 6.6 per cent, quarterbacks 5.5 per cent and guards 5.1 per cent. Injuries suffered making tackles accounted for 30.8 per cent of the fatalities. The next most frequent cause was blocking, with 10.2 per cent. Dr. Eastwood said the survey showed that most of the fatal injuries still occur in the second and fourth periods of games, which appears still a further reason for more frequent substitutions.

Government Services

Group to Study Illegitimacy Problem

A National Advisory Committee on unmarried parenthood is being formed by Katharine F. Lenroot, LL.D., chief of the Children's Bureau, U. S. Department of Labor, the *New York Times* reported January 3. "It is not merely a matter of a growing wartime illegitimacy rate," Miss Lenroot is reported to have said, "it is also a matter of not enough social workers, not enough medical and social service facilities available, not enough public information on the resources that are available."

Seek Laws to Curb "Baby Brokers"

A draft of essentials for adoption laws and procedures, which would curb the baby broker business by making every child up for adoption a charge of the state through its welfare department, was issued January 21 by the U. S. Children's Bureau, the *New York Times* reports. In a statement to the press, Katharine F. Lenroot, LL.D., chief of the bureau, is reported to have said that not more than one fourth of the states had adoption laws which approximated the recommended standards. To end a black market in babies, it was stated, three fourths of the states would need to make changes in methods of dealing with adoption cases, an estimated half of which involved children born out of wedlock. The census bureau receives reports of about 80,000 children born out of wedlock annually, exclusive of ten states which do not include an illegitimacy item on birth certificates. Among the non-reporting states are three of heavy populations, New York, Massachusetts and California. The proposed safeguards would serve:

To protect the child from unnecessary separation from parents who might give him a good home if sufficient help was available, from being adopted by persons unfit to rear him and from interference if he was established in his adoptive home.

To protect the natural parents from hurried decisions to give up a child, made under special strain and anxiety.

To protect adopting parents from taking responsibility for children about whose heredity or physical or mental capacity they knew nothing and from later disturbance of their relationship to the child by natural parents.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 13, 1945.

The Psychology of British Prisoners of War

In the correspondence columns of the *British Medical Journal* a physician wrote recently that "the very large majority of our returned prisoners of war will be problems for their lifetime." This statement has aroused the astonishment of Major D. L. Charters, whose experience renders him an authority on the psychology of prisoners of war. A Liverpool ophthalmic surgeon, in the Greek campaign of 1941 Major Charters allowed himself to be captured while attending the badly wounded, and with the same humanitarian motive he has since declined two opportunities for repatriation. For the last three and one-half years he has administered the medical affairs of large groups of wounded and disabled prisoners in Germany, including prisoners who are totally blind, have amputated limbs, are extensively burned, are paralyzed and have major orthopedic injuries. Nearly all have known several years of captivity; nearly all have suffered bitter disappointment when the first attempt at repatriation broke down in October 1941 and instead of going home they were returned to prison camps.

Major Charters realizes the pressing psychologic problems which in certain cases have resulted from years of enforced idleness, monotony, physical suffering and disablement. If any group of prisoners of war was likely to present psychologic problems, it was the kind of group with which he has had to deal. Nevertheless he emphatically denies that anything approaching a majority of prisoners will be "problems for their lifetime." Rather he would say that the majority of these men have gained in tolerance, understanding, patience, forbearance and courage. They have acquired a bigger concept of comradeship and community life. The average prisoner has demonstrated a high standard of adaptability and will do so again when he returns home. The average prisoner is not a "problem" to himself, to his companions or to his future employer, Major Charters states.

Poisoning by Petrol Fumes

In the *Journal of the Royal Army Medical Corps* Major T. N. Rudd has described a form of petrol poisoning which has occurred under war conditions. In the earlier phases of the war petrol was dispatched overseas in 4 gallon cans made of thin metal, packed in cardboard cases and stacked in the holds of freight ships. Unfortunately the cans were insufficiently rigid to prevent collapse under their own weight of those at the bottom of the stack, and petrol often escaped into the hold, sometimes to a depth of 2 or 3 feet. At the overseas port men worked intermittently in the holds in short shifts, no apparatus for breathing oxygen being available. A man might work twice a week on petrol shifts of five hours each. He would breathe the petrol laden atmosphere for up to ten minutes, after which he would rest for twice that period on deck, while two successive gangs of his fellows took over. On intervening days he would be employed in a petrol free atmosphere. But military circumstances often necessitated more frequent exposure.

Minor symptoms, such as dizziness, headache, tinnitus and faintness or a sense of intoxication, as from alcohol, were almost constant. Collapse with loss of consciousness frequently occurred. As many as 7 men out of 12 in one gang were rendered unconscious in one five hour shift. Some men were overcome so quickly by the fumes that they were unable to reach the bottom of the hold. On removal to a normal atmos-

phere recovery was immediate, both in stuporous and in exhilarated men. Vomiting was frequent. An unpleasant taste remained in the mouth for hours. Some men were unfit for work for twenty-four to forty-eight hours. These symptoms were transient and were outweighed by more lasting changes. A previously cheerful man became morose and sullen. One man, previously normal, had an acute psychosis. Major Rudd holds that the only satisfactory way to avoid dangerous exposure to petrol fumes of workers in ships' holds is the use of an oxygen apparatus on the worker's back. These should be provided if it should ever again become necessary to export petrol in the manner described.

The Limitations of Penicillin

Delivering the first Lister lecture of the Society of Chemical Industry at Edinburgh, Sir Alexander Fleming, the discoverer of penicillin, said that like the sulfonamides penicillin is highly specific, affecting certain microbes but having little or no action on others. He thought it unlikely that we should ever get an antiseptic which would affect all microbes without being poisonous to some human cells. Thus we shall have to arm ourselves with a series of chemicals covering the whole range of microbe growth. In another respect penicillin is not perfect, Dr. Fleming said; it is rapidly destroyed in the stomach and so is ineffective when taken by mouth. But there is still hope that chemists may be able to synthesize it and then tinker with the molecule so as to remedy imperfections. Moreover there are thousands of other microbes which may manufacture antiseptics even better than penicillin or which may give a clue to the chemical linkages responsible for the destruction of bacteria. "The work is not finished. It is just beginning," he declared.

Honor for South African Surgeon

The honorary fellowship of the Royal College of Surgeons of England has been conferred on I. W. Brebner, professor at Witwatersrand University, South Africa, where he has held the chair of surgery for the last fifteen years. The diploma was handed to him by Major Gen. P. H. Mitchiner, a member of the council of the Royal College of Surgeons, after he delivered the Beyers memorial lecture. He referred to Professor Brebner's work as a surgeon and as a teacher and to the valuable services he had rendered the army in the last war and in this one as consulting surgeon to the South African forces. The fame of that work had spread throughout America and the British commonwealth of nations, General Mitchiner declared.

Marriages

BENJAMIN ELY COLE JR., Mountain Lakes, N. J., to Miss Jennifer Elsie Habian at Camp Le Jeune, N. C., November 29.

BERNADINE DREWNIANY, Lyndhurst, N. J., to Mr. John Joseph Killeen of Belleville in Taunton, Mass., November 25.

WILLIAM L. MUSSER, Clarksburg, W. Va., to Miss Jeanette Elizabeth Whited in Portsmouth, Va., November 17.

JOHN D. CHRISTIAN, Rocky Mount, N. C., to Miss Virginia Rupprecht of New Brunswick, N. J., November 25.

THOMAS BENEDICT CLARK, Hasbrock Heights, N. J., to Miss Jane Norma Benjamin of Rutherford, December 16.

WILLIAM SPENCER MACCOMB, New York, to Miss Janet Abbot Judd of Middletown, Conn., December 30.

LESTER WALLACE CUNNINGHAM to Miss Gertrude Jessie Reid, both of Mandarin, Fla., November 7.

ROBERT N. BILLS to Miss Garnett Campbell, both of Gary, Ind., in Chicago, October 5.

EVERETT SPERRY BURN to Miss Alice Logan, both of West Chester, Pa., October 17.

SOLOMON J. ROSENBERG, Brooklyn, to Miss Ruth Daniels of Milwaukee, December 31.

JOHN B. TREDWAY, Erie, Pa., to Miss Nell Emmet recently.

Deaths

Irving Samuel Cutter * formerly dean of Northwestern University Medical School and recently health editor of the *Chicago Tribune*, died in the Passavant Memorial Hospital, February 2, aged 69, of carcinoma of the prostate and generalized carcinomatosis.

Dr. Cutter was born in Keene, N. H., Dec. 5, 1875. For a year in 1896 he was instructor in a high school in Humboldt, Neb., principal at the Beatrice High School from 1898 to 1900 and general agent at Ginn and Company from 1900 to 1906. He received the degree of bachelor of science at the University of Nebraska, graduating there in medicine in 1910 and subsequently serving as instructor of physiologic chemistry, professor of biochemistry and director of the laboratory and, for the period 1915 to 1925, as dean. In the latter year he joined the Northwestern faculty as associate professor of medicine and dean, serving in the dual capacity until 1941, when he retired to become emeritus professor of medicine and dean. He had been medical superintendent of Passavant Hospital since 1928, serving also as trustee of Northwestern University and Wesley Memorial Hospital.

Dr. Cutter held the rank of captain in the medical corps of the U. S. Army, 1918-1919, serving in charge of medical service at Camp Gordon, Georgia, and lieutenant colonel in the medical section of the Officers Reserve Corps from 1920 to 1929. He held membership in numerous societies and fraternities, including the American Chemical Society, Sons of the American Revolution, Alpha Omega Alpha, Chi Phi, Sigma Xi and Phi Rho Sigma, of which he had been president from 1927 to 1934. He held fellowship in the American Association for the Advancement of Science and served as chairman, member of the executive council and president in 1923 of the Association of American Medical Colleges. He was president of the Society of Medical History of Chicago in 1934 and at one time was vice president of the Illinois Social Hygiene League. Honorary degrees which he had received included the doctor of science from the University of Nebraska in 1925 and Northwestern University in 1941, and doctor of laws from Jefferson Medical College, Philadelphia, in 1931.

Dr. Cutter was a prolific writer for many years, and served also as first editor of the *Nebraska State Medical Journal* from 1916 to 1918 and member of the editorial board of the *Annals of Medical History*. Since 1934 he had been health editor of the *Chicago Tribune* and author of the daily column "How to Keep Well." In recognition of his services, Col. Robert R. McCormick, editor and publisher of the *Chicago Tribune*, gave property to Northwestern University for the establishment of a fund known as the Irving S. Cutter Fund for Medical Research. Included among his contributions to the literature are *School of Medicine*, *History of Physical Therapy*, *History of Obstetrics and Gynecology* and *Laboratory Manual of High School Botany*, of which he was a co-author.

Logan Clendening * Kansas City, Mo., noted health educator, was found dead in his bed at his home January 31, presumably as the result of suicide, aged 60.

Dr. Clendening was born in Kansas City May 25, 1884. He studied for three years at the University of Michigan, Ann Arbor, but did not complete his studies there because of ill health. In 1907 he graduated at the University of Kansas School of Medicine, Lawrence-Kansas City, entering private practice in Kansas City in 1909. The following year he joined the faculty of his alma mater as instructor in internal medicine, serving in this capacity until 1914; he was assistant professor of medicine from 1919 to 1924 and associate professor of medicine from 1924 to 1928, when he became professor of clinical medicine and history of medicine, a position he held at the time of his death. He was a member of the staffs of St. Luke's and Kansas City General hospitals, serving the two at one time as president of the staff.

Dr. Clendening was a member of numerous scientific groups, including the American Therapeutic Society and the American Climatological and Clinical Association; once he served as president of the American Association of the History of Medicine. He held fellowship in the American College of Physicians, which he had served as a member of the board of governors from 1926 to 1930, third vice president, 1929-1930, and a member of the board of regents in 1931. He had been a major in the medical corps of the U. S. Army in World War I, serving as chief of medical service, Base Hospital, Fort Sam Houston, from 1917 to 1919.

Dr. Clendening for a number of years had written a widely syndicated newspaper column entitled "Diet and Health." Other writings to his credit include *Modern Methods of Treatment*, *the Human Body*, *the Care and Feeding of Adults*, *Behind the*

Doctor, *Source Book of Medical History*, *the Balanced Diet and Laboratory Notebook Method in Teaching Physical Diagnosis and Clinical History Recording*. He had traveled extensively in Egypt, England, France, Germany, Greece and Italy and had taken graduate work in Edinburgh.

William M. Donald, Detroit; Detroit College of Medicine, 1887; emeritus professor of medicine at his alma mater, now known as the Wayne University College of Medicine; president of the Wayne County Medical Society, 1922-1923; for many years a member of the council and president in 1928 of the Tri-State Medical Association; past president of the Michigan Health Exposition; member of the American Medical Association; fellow of the American College of Physicians; since 1939 emeritus member of the Michigan State Medical Society, once serving as chairman of its medical section; served as chairman of the Wayne County Board of Review during World War I; served as medical consultant and chief of staff at St. Mary's Hospital, consulting physician for Receiving Hospital and consultant in medicine to Evangelical Deaconess Hospital, St. Joseph's Mercy Hospital and the Jefferson Clinic and Diagnostic Hospital; for many years chief of staff at the Protestant Children's Home; received the honorary degree of doctor of science in medicine from Wayne University in 1935; established the "Doctors' Corner" of the Medical Library, a branch of the Detroit Public Library, in which are books written by physicians on nonmedical subjects and fiction; died in the Grace Hospital December 20, aged 84, of carcinoma of the left side of the urinary bladder.

George Carl Hensel, San Francisco; University of California Medical School, San Francisco, 1922; assistant clinical professor of orthopedic surgery at his alma mater; interned and later on the visiting staff at the University of California Hospital; specialist certified by the American Board of Orthopaedic Surgery, Inc.; member of the American Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; lieutenant commander, Naval Reserve, not on active duty; for many years on the staff of the Shriners' Hospital for Crippled Children; served as chief surgeon at the Carrie Tingley Hospital, Hot Springs, N. M.; formerly orthopedic surgeon, crippled children's division, Nevada State Department of Health; died November 14, aged 49, of cerebral hemorrhage.

Vernor Milo Moore * Grand Rapids, Mich.; University of Michigan Medical School, Ann Arbor, 1911; served the Michigan State Medical Society as a member of the executive committee and chairman of the council, councilor of the Fifth District and, at the time of his death, president-elect; specialist certified by the American Board of Radiology; member of the American Roentgen Ray Society, Radiological Society of North America and the American College of Radiology; past president of the Kent County Medical Society; director, x-ray department, St. Mary's Hospital; on the staff of Blodgett Hospital; died December 30, aged 58, of coronary occlusion.

Thomas L. Abington, Oakdale, La.; Memphis (Tenn.) Hospital Medical College, 1903; coroner of Sabine Parish for one term and mayor of Oakdale for two terms; died October 13, aged 75, of pneumonia and nephritis.

Roscoe Conklin Adams, Lexington, Ky.; Barnes Medical College, St. Louis, 1898; rating specialist (medical) at the Veterans Administration; served during World War I; died January 3, aged 67, of hypertensive heart disease.

George Campbell Bates * Rushville, Ill.; Harvard Medical School, Boston, 1921; died in Beardstown December 2, aged 55, of cerebral hemorrhage and diabetes mellitus.

David Takeji Betsui * Hanapepe, Hawaii; Washington University School of Medicine, St. Louis, 1931; diplomate of the National Board of Medical Examiners; served an internship at the Evangelical Deaconess Home and Hospital and the Alexian Brothers' hospitals, St. Louis; lieutenant in the medical reserve corps, U. S. Army, not on active duty; died in the Queen's Hospital, Honolulu, October 24, aged 41, of coronary heart disease.

Aaron Brav * Philadelphia; Medico-Chirurgical College of Philadelphia, 1902; chief ophthalmologist at the Jewish and Northern Liberties hospitals; died December 2, aged 69, of heart disease.

Oliver Wendell Brown * Falmouth, Ky.; University of Louisville Medical Department, 1906; died in the Booth Memorial Hospital, Covington, December 1, aged 70, of carcinoma of the colon at the rectosigmoid junction.

Lillian M. Burlingame, Brooklyn; New York Medical College and Hospital for Women, Homeopathic, New York, 1909; formerly adjunct professor of gynecology at her alma mater; died in the New York Hospital December 4, aged 73, of general abdominal carcinomatosis and arteriosclerotic heart disease with mitral insufficiency.

Marcus F. Carson, Griffin, Ga.; Medical Department of Tulane University of Louisiana, New Orleans, 1894; member of the American Medical Association; formerly a member of the state board of medical examiners; died November 26, aged 73, of cerebral hemorrhage.

William S. Charles * Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1901; died in Chicago October 8, aged 77.

Charles Cleveland Clark, Union City, N. J.; New York Homeopathic Medical College and Hospital, New York, 1898; member of the American Medical Association; on the courtesy staff of the Christ Hospital, Jersey City, where he died November 29, aged 75, of cerebral thrombosis.

Ernest E. Couch, West Allis, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1899; member of the American Medical Association; died November 14, aged 80, of cardiorenal disease and senility.

Raymond John Dawson * Methuen, Mass.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1933; on the courtesy staffs of the Clover Hill and Lawrence General hospitals, Lawrence, and the Mary E. McGowan Memorial Hospital; died November 20, aged 38, of coronary occlusion.

Charles Leo Dugan, Cincinnati; Georgetown University School of Medicine, Washington, D. C., 1912; assistant medical examiner for the Baltimore and Ohio Railroad; died in the Cincinnati General Hospital November 28, aged 55, of a fractured skull and an intracranial hemorrhage.

Fred August Eickelberg, Reeseville, Wis.; Rush Medical College, Chicago, 1902; died November 24, aged 68, of carcinoma of the rectum.

Warren Harkness Everett, Peru, N. Y.; Albany Medical College, 1899; member of the American Medical Association; health officer and school physician; on the staff of the Physicians Hospital, Plattsburg; died December 20, aged 76, of pernicious anemia.

Richard William Finley, Chapel Hill, N. C.; Western Reserve University Medical Department, Cleveland, 1918; formerly on the faculty at his alma mater and on the staff of the Lakeside Hospital in Cleveland; died November 28, aged 54, of heart disease.

John G. Franken, Chandlerville, Ill.; College of Physicians and Surgeons, Chicago, 1895; member of the American Medical Association; died in the Memorial Hospital, Springfield, November 26, aged 81, of interstitial nephritis.

Louis Clark French, Chicago; Illinois Medical College, Chicago, 1905; member of the American Medical Association; died November 20, aged 66, of congestive heart disease and bronchiectasis.

Frederick Julius From, Halbur, Iowa; State University of Iowa College of Medicine, Iowa City, 1887; died in North Loup, Neb., November 21, aged 83, of heart block.

Henry Lisle Gamble, Moorefield, W. Va.; University of the South Medical Department, Sewanee, Tenn., 1899; died in the Potomac Valley Hospital, Keyser, November 30, aged 70, of cerebral hemorrhage.

John Reeves Gamble, Lincolnton, N. C.; University of Tennessee College of Medicine, Memphis, 1911; member of the draft board during World War I; served two terms as mayor of Lincolnton; one of the founders and past president of the Rotary Club; chief surgeon for the Seaboard and Southern Railways; member of the American Medical Association; founder, chairman of the staff and medical superintendent of the Reeves Gamble Hospital, where he died December 1, aged 59.

John Simpson Gordon * Milwaukee; University of Illinois College of Medicine, Chicago, 1912; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; past president of the Milwaukee County Medical Society; on the staffs of the Milwaukee, Columbia and Children's hospitals; died December 6, aged 56, of coronary occlusion.

Walter A. Hall, New Albany, Ind.; Hospital College of Medicine, Louisville, Ky., 1904; member of the American Medical Association; for many years county physician; on the staff of St. Edward Hospital, where he died December 9, aged 64, of coronary heart disease.

Reuben Caldwell Hanchett, Chicago; Syracuse University College of Medicine, 1884; formerly professor of materia medica and therapeutics at his alma mater and physician to the Hospital of the Good Shepherd in Syracuse, N. Y.; served during World War I; captain, medical reserve corps, U. S. Army, not on active duty; died December 15, aged 81, of carcinoma of the left breast with metastases.

Robert S. Hearn, Pinson, Tenn.; University of Tennessee Medical Department, Nashville, 1904; member of the American Medical Association; died in the Gantly-Ramsay Hospital, Memphis, December 9, aged 69, of bronchopneumonia.

John Ernest Heiss, Perry, Okla.; Loyola University School of Medicine, Chicago, 1916; member of the American Medical Association; died December 14, aged 60, of heart disease.

Gustav A. Hermann * Hamilton, Ohio; Western Pennsylvania Medical College, Pittsburgh, 1896; member of the board of health; died in Indianapolis December 7, aged 80, of coronary thrombosis.

Hardin I. Hughes, Hardin, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1901; died December 5, aged 69, of arteriosclerosis.

Thomas Charles Irwin * Grand Rapids, Mich.; Trinity Medical College, Toronto, Ont., Canada, 1891; served as president of the Kent County Medical Society; formerly professor of surgery and clinical surgery at the Grand Rapids Medical College; on the courtesy staffs of the Butterworth and St. Mary's hospitals; from 1924 to 1928 chief of staff, Blodgett Memorial Hospital, where he died December 9, aged 78, of coronary thrombosis.

John Russell Kelly, Plainfield, N. J.; University of the City of New York Medical Department, New York, 1892; for many years a physician with the Holland-American Steamship Line; died December 24, aged 75, of coronary thrombosis.

Joseph W. Kemp, Roanoke, Ind.; Medical College of Indiana, Indianapolis, 1891; died November 29, aged 88, of pneumonia, influenza and cerebral hemorrhage.

Louise Cora Kralick, Pittsburgh; University of Pittsburgh School of Medicine, 1930; died November 24, aged 44, of angina pectoris.

Walter Max Kraus * New York; Johns Hopkins University School of Medicine, Baltimore, 1913; member of the American Neurological Association, American Association of Neuropathologists and the Association for Research in Nervous and Mental Disease; served during World War I; commissioned a major in the medical corps, Army of the United States, on April 29, 1943; resignation from service effective in April 1944; died August 18, aged 55.

John Leonard Lee * Alexandria, Minn.; University of Minnesota Medical School, Minneapolis, 1922; interned at the Minneapolis General Hospital; died in Minneapolis December 9, aged 49, of coronary occlusion.

Marquis H. Maness, Roxton, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1882; member of the American Medical Association; died in Terrell November 21, aged 85, of senility.

Benjamin Franklin Markin, Columbia, S. D.; Columbian Medical College, Kansas City, Mo., 1900; died October 6, aged 65, of coronary thrombosis.

Harry E. Matthews * Orange, N. J.; College of Physicians and Surgeons, New York, 1888; served during World War I; on the staff of the Orange Memorial Hospital; died in Bermuda November 25, aged 78.

William J. McCarthy, Madelia, Minn.; Northwestern University Medical School, Chicago, 1897; member of the American Medical Association; in 1920 president of the Southern Minnesota Medical Association; president of the board of education at Madelia for many years; also served as mayor of Madelia and chairman of the board of health; owned and operated the Madelia Hospital from 1918 to 1941, when it was purchased by the village; bank president; died October 25, aged 76, of acute lymphatic leukemia.

Robert Howard Meikle, Arlington, Mass.; University of Bishop College Faculty of Medicine, Montreal, 1897; died October 12, aged 73, of pulmonary edema.

William Wallace Noyes, Dunbar, W. Va. (licensed in West Virginia in 1903); died in Cumberland, Md., December 15, aged 74, of chronic bronchial asthma, general arteriosclerosis and chronic myocarditis.

Arcadio Tigrio Obando, Los Angeles; Cornell University Medical College, New York, 1930; member of the American Medical Association; interned at the Hollywood Clara Barton Memorial Hospital; died November 5, aged 41, of contusion of the brain and subdural hemorrhage.

Daniel Adam Orth * Wheaton, Ill.; Rush Medical College, Chicago, 1896; fellow of the American College of Surgeons; at one time clinical professor of surgery at the Loyola University School of Medicine, Chicago; formerly secretary and since 1912 attending surgeon at St. Mary of Nazareth Hospital,

Chicago; president and chief of surgical staff, Columbus Hospital, Chicago, where he died January 3, aged 72, of left bundle branch block.

Jeddiah William Pidcock * Los Angeles; College of Physicians and Surgeons of San Francisco, 1907; formerly practiced in Ogden, Utah, where he served as county physician and was on the staff of the Thomas D. Dee Memorial Hospital; on the staff of the Hollywood Hospital; died October 30, aged 66, of nephritis and diabetes mellitus.

William H. Porter, Calvin, N. D.; College of Physicians and Surgeons, School of Medicine of the University of Illinois, 1903; served as state senator; died in the General Hospital, Devils Lake, October 15, aged 71, of carcinoma of the rectum.

Linley Murray Reagan, Kokomo, Ind.; Physio-Medical College of Indiana, Indianapolis, 1901; served during World War I; formerly professor of obstetrics at his alma mater; died November 28, aged 72, of coronary embolism.

Jacob Michael Smittle, Waucoma, Iowa; State University of Iowa College of Medicine, Iowa City, 1897; formerly member of the state board of health, school board and town

tendent of the Washington County Hospital; visiting surgeon at the Barre City Hospital; died November 11, aged 63, of accidental illuminating gas poisoning.

Arthur Henry Temple * Passaic, N. J.; Columbia University College of Physicians and Surgeons, New York, 1896; served in France during World War I; chief of staff, Passaic General Hospital; died in Greenwood Lake November 16, aged 70, of coronary occlusion.

Jesse Harold Turner, La Canada, Calif.; Loyola University School of Medicine, Chicago, 1927; member of the American Medical Association; interned at St. Luke's Hospital in San Francisco; on the staff of the French Hospital, Los Angeles; died November 20, aged 48, of coronary occlusion.

Frank Vanatta Willhite, Redfield, S. D.; College of Physicians and Surgeons, School of Medicine of the University of Illinois, 1905; member of the American Medical Association; since 1923 medical superintendent of the State School and Home for Feeble-minded; died October 20, aged 66, of carcinoma of the rectum.

Tazwell Brown Wingo, Martin, Tenn.; Vanderbilt University School of Medicine, Nashville, 1900; died in the Baptist



CAPT. HERMAN L. JACOBIOUS
M. C., A. U. S., 1916-1944



CAPT. EDWARD J. HACKETT
M. C., A. U. S., 1907-1944



MAJOR MICHAEL A. RAFFERTY
M. C., A. U. S., 1903-1944

council; on the staff of the Decorah Hospital, Decorah; died in St. Joseph's Hospital, New Hampton, November 19, aged 69, of arteriosclerosis, prostatic hypertrophy and bronchopneumonia.

John William Stewart * Barre, Vt.; University of Vermont College of Medicine, Burlington, 1907; acting superin-

tendent of the Washington County Hospital; died November 10, aged 71, of congestive heart disease due to coronary insufficiency and diabetes mellitus.

Thomas Grant Youmans, Columbus, Ohio; Starling Medical College, Columbus, 1895; professor of genitourinary surgery and dermatology at the Ohio Medical University from 1899 to 1901; police surgeon for eight years; died October 18, aged 75.

KILLED IN ACTION

Herman Lawrence Jacobius, New York; Cornell University Medical College, New York, 1939; served an internship at the Mount Sinai Hospital, New York, and a residency in medicine at the Montefiore Hospital, New York; commissioned a first lieutenant in the medical corps, Army of the United States, on Oct. 3, 1942; later promoted to captain; took part in the North African campaign and the invasion of Sicily and Italy; killed in action in the Netherlands Sept. 28, 1944, aged 28.

Edward John Hackett * Westfield, N. J.; University and Bellevue Hospital Medical College, New York, 1933; interned at the Medical Center of Jersey City; formerly police surgeon; served as medical inspector of the public schools and of Holy Trinity schools; commissioned a first lieutenant in the medical corps, Army of the United States, on Aug. 3, 1942; later promoted to captain; squadron surgeon with a mechanized cavalry reconnaissance unit attached to General Patton's Third Army; died in France Sept. 13, 1944, aged 37, of wounds received in action.

Michael Alphonse Rafferty * Weston, W. Va.; Rush Medical College, Chicago, 1937; graduated as a pharmaceutical chemist from West Virginia University in 1929; served an internship at St. Luke's Hospital in Cleveland; formerly associate professor of biochemistry at the West Virginia University School of Medicine, Morgantown; served as assistant medical director of Miles Laboratories, Inc., Elkhart, Ind.; member of the Indiana State Medical Association; commissioned a captain in the medical corps, Army of the United States, on June 2, 1942 and assigned to Billings General Hospital, Fort Benjamin Harrison; in October 1942 began a twelve week course at the University of Michigan to qualify as head of a hospital station laboratory, and in the spring of 1943 was assigned to the station hospital at Fort Custer, Mich., later transferred to Fort Dix, New Jersey, where he was assigned to the 15th General Hospital; promoted to major on Nov. 1, 1943; killed in action in Belgium, Nov. 24, 1944, aged 40.

Correspondence

APPRAISAL OF NEW DRUGS

To the Editor—The communication of Chauncey D. Leake and his associates (*THE JOURNAL*, January 27, p. 244) discussing our recent article "The Laboratory and Clinical Appraisal of New Drugs" (*THE JOURNAL*, Dec. 9, 1944, p. 958) deserves comment, since there are some real differences of opinion regarding some of our proposals. Our paper was concerned not only with setting forth techniques to be used in the investigation of new drugs but also with the establishment of criteria whereby laboratory and clinical data can be evaluated. We included suggestions regarding the type of study which in our opinion would be productive of useful information. As we indicated, however, these suggestions are by no means exhaustive.

We pointed out, as has Professor Leake, that selection of suitable experimental animals is a very important consideration in the laboratory evaluation of new agents. Professor Leake has emphasized the importance of a study of the toxicity of the drug and we agree with this emphasis. We do believe, however, that, in order to approach a study of toxicity effectively, a careful pharmacodynamic study of the drug is essential. Such a study will provide information regarding probable, and often otherwise unsuspected, sites of potentially harmful action.

We are very much concerned with Professor Leake's characterization of long term chronic toxicity studies as "pointless." In opposition to this point of view may we cite the experience of the Division of Pharmacology of the Food and Drug Administration, where during the past four or five years long term chronic toxicity studies have been conducted on about thirty-five chemical agents. In approximately 20 per cent additional definite pathologic changes occurred after the six to nine month period mentioned by Professor Leake and his associates. In all but one instance these late changes involved neoplastic growth. We are therefore very strongly of the opinion that the toxicity of a chemical agent has not been fully appraised until long term studies of this nature have been made.

As Professor Leake has pointed out, chronic toxicity studies may not be necessary for agents which are not used frequently or continuously. Obviously it is 'pointless' to do a long term chronic toxicity study on a diagnostic agent which may be used only once in a person's lifetime.

We should like to insert a note of caution regarding the recommendation to let the knowledge of the toxicity and actions of a group of chemical agents influence the decision as to the extent of work necessary to appraise adequately another closely related agent. The pharmacologic properties of drugs cannot be predicted reliably on the basis of a chemical similarity to other well known drugs. Even optical isomers show tremendous differences in pharmacologic activity; e. g., d- and l-ephedrine and d- and l-amphetamine. Certainly the pharmacologic differences between these four closely related compounds cannot be predicted on the basis of chemical differences alone. True, a knowledge of chemical differences and similarities is valuable as a guide, but there are so many exceptions to the so-called relationship between chemical structure and pharmacologic activity that reliance on that relationship as a short cut to adequate investigation is extremely risky.

Finally, we seriously doubt that the application of the criteria set forth in our paper will delay the use of worthwhile therapeutic agents. In fact it is our belief that ill conceived and poorly executed investigations have contributed materially to delays in the proper and widespread use of therapeutically desirable agents.

WATSON VAN WINKLE, JR., M.D.
ROBERT P. HEWICK, PH.D., M.D.
HERBERT O. CALVERT, PH.D.
Washington, D. C.
ALSTON SMITH, M.D. Chicago

CHILDREN'S BUREAU STATEMENT ON CRIPPLED CHILDREN PROGRAM

To the Editor—In the Dec. 30, 1944 issue of *THE JOURNAL* page 1154, there is an editorial comment on the recent regulation by the Secretary of Labor relating to provision of diagnostic services under state plans for services for crippled children. In view of the fact that the next to the last sentence misinterprets the regulation and implies that the regulation applies to therapeutic as well as to diagnostic services, I would like to request that the following statement issued by the chief of the Children's Bureau on Dec. 26, 1944 to the executive officers of state crippled children's agencies be made available to the readers of *THE JOURNAL* together with this letter. The statement is as follows:

MEMORANDUM

Dec. 26, 1944

To: Executive officers of state crippled children's agencies
From: Katharine F. Lenroot, Chief, Children's Bureau, U. S. Department of Labor
Subject: Issuance of regulation promulgated by Secretary of Labor pertaining to diagnostic requirements for diagnostic services under

The policy set forth in the secretary's regulation does not represent any departure from policies usually followed in comparable public programs of medical care. In many states, for example, services and facilities for the diagnosis of tuberculosis are available to any one who applies for such service. Similarly, medical diagnosis is made freely available to any one who applies for services under state vocational rehabilitation programs. The Rules and Regulations Governing Allotments and Payments to the States of Venereal Disease Funds provide that "all health departments or clinics receiving funds shall provide facilities for (1) diagnosis and emergency treatment of all patients who apply; (2) continued treatment, consultative advice or opinion for all patients referred by private physicians; and (3) continued treatment for all patients unable to afford private medical care."

It is, therefore, sound public policy that diagnostic services be freely available to any child who applies for services under the state crippled children's program in order that the responsible public agency may determine the need for and extent of care required if the child is to have the best possible physical restoration, emotional and social adjustment, and educational and work opportunities.

The regulation of the Secretary of Labor to which the foregoing statement refers is as follows:

Nov. 25, 1944.

U. S. DEPARTMENT OF LABOR
OFFICE OF THE SECRETARY

Washington, D. C.

Title 42—Public Health

CHAPTER II—U. S. CHILDREN'S BUREAU

Part 202—Services for Crippled Children

Pursuant to the authority granted by section 1102, 49 Stat. 647, 42 U. S. C. 1302; section 513, 49 Stat. 632, as amended by section 506, 53 Stat. 1381, 42 U. S. C. 713, the following amendment to section 202.4 of the regulations (42 C. F. R. part 202) relating to services for crippled children is herewith issued:

Section 202.4 is amended by inserting, after the second sentence thereof, the following provisions: "Effective July 1, 1945, it shall be a condition of approval of a plan that it provide that diagnostic services will be made available thereunder to crippled children without restrictions as to race, color, creed, economic status, legal residence, age (except as to persons above the maximum age for which such services are legally available within the state), the necessity of referral by any person other than the child's parents or legal guardian, or similar restrictions inconsistent with the free availability of such services." (Sec. 1102, 49 Stat. 647, 42 U. S. C. 1302; Sec. 513, 49 Stat. 632, as amended by Sec. 506, 53 Stat. 1381, 42 U. S. C. 713.)

Nov. 17, 1944.

Approval recommended.

FRANCES PERKINS.

Secretary.

(seal)

KATHARINE F. LENROOT,
Chief of the Children's Bureau.

I hereby certify that this is a true copy of the original.

PETER SEITZ,
Principal Attorney.

MARIHA M. ELIOT, M.D., Washington, D. C.

Associate Chief, Children's Bureau,

U. S. Department of Labor.

NEUROMUSCULAR EXHAUSTION SYNDROME

To the Editor:—I was greatly interested in the paper "A Subacute Generalized Neuromuscular Exhaustion Syndrome" by J. M. Nielson, in *THE JOURNAL*, Nov. 25, 1944, page 801. A possible etiologic explanation for this "syndrome" is that it represents acute beriberi (i. e., acute polyneuritis). It could be explained on the basis of exhaustion of vitamin B by the heightened metabolism of excessive physical exertion in the face of a relatively inadequate supply of that vitamin.

As pointed out by G. R. Cowgill (*The Vitamin B Requirement of Man*, New Haven, Conn., Yale University Press, 1934) any process increasing the total metabolism will increase the requirement for vitamin B.

I reported (case 7 in *Vitamin B Deficiency in Private Practice*, *New England J. Med.* 231:174 [Aug. 3] 1944) a slightly similar though very much milder case of peripheral neuritis of the nerves of the arms and hands of a former shipyard worker who did heavy manual labor from sixteen to seventeen hours a day.

The importance of recognizing the nature of the underlying process as essentially a simple vitamin B deficiency lies, of

course, in the obvious therapeutic implications. Untreated peripheral neuritis, even those proved to be due to deficiency of vitamin B, eventually become refractory to all therapy. Time is of the greatest importance. Early neuritis of this type responds dramatically to appropriate therapy.

DUDLEY MERRILL, M.D., Cambridge, Mass.

TRANSITORY PULMONARY INFILTRATIONS

To the Editor:—The editorial "Transitory Pulmonary Infiltrations Associated With Eosinophilia—Loeffler's Syndrome," which appeared in *THE JOURNAL*, Nov. 25, 1944, was a most interesting summary of a condition that seems to have suffered unmerited neglect. In discussing the possible etiologic role played by parasites, reference was made in the editorial only to *Ascaris lumbricoides*, *Fasciola hepatica* and *Endameba histolytica*. Transient pulmonary infiltrations are known to occur in patients infected with *Necator americanus* and, possibly even more commonly, in patients infected with *Strongyloides stercoralis*.

Pulmonary changes associated with strongyloidiasis are well appreciated in animals (Blacklock, B., and Adler, S.: *The Pathological Effects Produced by Strongyloides in a Chimpanzee*, *Ann. Trop. Med.* 16:283 [Oct.] 1922. Faust, E. C.: *Experimental Studies on Human and Primate Species of Strongyloides: IV. The Pathology of Strongyloides Infection*, *Arch. Path.* 19:769 [June] 1935. Lecarpentier-Dubosq, M.: *La strongylose broncho-pulmonaire des bovidés: Traitement et prophylaxie*, *Ecole nat. vet. d'Alfort*, Paris, 1928. Smith, R. P.: *Pulmonary Strongylosis in Sheep*, *Vet. J.*, London 83:294, 1927.) Gage (A Case of *Strongyloides Intestinalis* with Larvae in the Sputum, *Arch. Int. Med.* 7:561 [April] 1911) reported a case in which there were signs of diffuse bronchitis and lobar pneumonia and, in the sputum, *Strongyloides* larvae. The process in the lungs cleared rapidly, although the larvae persisted in the sputum for two months. At postmortem examination the diagnosis of *Strongyloides pneumoniae* was confirmed. De Langen (cited by Strong, R. P., in *Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases*, ed. 6, Philadelphia, Blakiston Company, 1942, vol. 2, p. 1284) described 2 cases of strongyloidiasis in which larvae were recovered from the sputum. In material regarded as sputum mixed with vomitus obtained from a patient whose feces showed large numbers of rhabditiform larvae, Shimura and Ogawa (On Filariform Larvae Found in Vomitus of a Patient Infested with *Strongyloides*, *Tokyo M. News*, 1920, number 2197, p. 1829) found filariform larvae and at autopsy were able to trace the course of migration of the larvae from the intestine to the lungs. Nolasco and Africa (Fatal Case of Paralytic Ileus Associated with Severe *Strongyloides* Infestation Suggesting Internal Autoinfection, *J. Philippine Islands M. A.* 16:275 [May] 1936) and Torres and De Azevedo (Lesions Produced in Man by *Strongyloides*, *Livro Jubilar de Prof. L. Travassos*, Rio de Janeiro, 1938, p. 475) demonstrated *Strongyloides* larvae in the lungs in human beings at autopsy. Froes (Larves de strongyloides dans un épanchement séro-hémorragique de la plèvre, *Ann. de parasitol.* 8:171 [March 1] 1930) reported a case of pleural effusion in which rhabditiform larvae were discovered before death. Yoshino (Clinical Observations on 25 Cases of *Strongyloides Stercoralis* in the Yaeyama Archipelago, *J. M. A. Formosa* 31:99, 1932) described 25 cases of strongyloidiasis, in 14 of which bronchitis was present. Larvae were found in the sputum of 3 of the latter. Faust (*Experimental Studies on Human and Primate Species of Strongyloides: IV. The Pathology of Strongyloides Infection*, *Arch. Path.* 19:769 [June] 1935) described the case of a volunteer who was inoculated percutaneously with a chimpanzee strain of *strongyloides* and who showed both subjective and

objective evidence of slight pulmonary involvement from the fourth to the eighth day after inoculation

It would appear that the transient pulmonary infiltrations which occur in some patients with helminthiasis and eosinophilia, especially in those infected with *Strongyloides stercoralis*, may represent invasion of the lungs by the larvae themselves. At any rate, careful and thorough study of the sputum and the stools for ova and parasites is warranted in every case in which transitory pulmonary infiltrations appear associated with eosinophilia.

J EDWARD BERR, Captain M C A U S

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Explosion of Bulb in Infra-Red Lamp—The patient suffered from arthritis and neuritis and at intervals for about four years submitted to infra-red treatments administered by the defendant chiropractor in his office. Dec 6, 1940 she lay on a table unattended in a room with her back exposed to an infra-red deep therapy lamp about 30 inches distant, having an unscreened 1,000 watt bulb. After she had been in this position for about fifteen minutes the bulb exploded without warning and hot glass fell on her back causing severe burns. She and her husband instituted an action for malpractice against the chiropractor. At the conclusion of the evidence of the plaintiff at the trial the court granted a motion for nonsuit on the ground that the evidence had failed to prove negligence on the part of the chiropractor. On appeal the district court of appeals, fourth district, California affirmed the action of the trial court. *Croce v McBride*, 149 P. (2d) 69 J. A. M. A. 125:868 (July 22) 1944. The plaintiffs then appealed to the Supreme Court of California.

In considering the propriety of the nonsuit entered by the trial court, said the Supreme Court we must accept the evidence that is most favorable to the plaintiffs and disregard that which is unfavorable. At the trial the plaintiffs called as a witness the chiropractor who stated that he had made no inspection of the bulb that exploded and could make none other than turning it on to see if it was working, that he had never heard of one exploding before, that he had used the bulb in question for approximately two years before the accident, that he had a number of the same type which he used as frequently as ten times a day each, that some operated as long as five years before burning out, that there are about 200 lamps of this type in use in his locality, that the bulb in question was a standard one in general use, and that no manufacturer so far as he knew, had ever theretofore recommended the screening of such lamps as a precautionary measure. The defendant's evidence, the Supreme Court emphasized, while indicating that the lamp to which the patient was exposed had no screen on it was to the effect that the chiropractor did have screens on the other lamps in use in his office. The plaintiffs contended that the trial court could have reasonably concluded from the evidence that the chiropractor's failure to use a screen or other protective device constituted negligence. In answer to this the chiropractor argued that there was no evidence produced at the trial that he could have used a screen without interfering with the therapeutic efficiency of the lamp or that such a screen would have prevented injury to the patient. The court however, concluded that an effective answer to the defendant's points was the fact that after the injury to the patient he used screens as a protective measure on all lamps in his office. From this said the Supreme Court the trial court could reasonably have inferred that a screen would not have interfered with the therapeutic efficiency of the lamp or that it would have afforded at least some protection in event of damage to the bulb. Furthermore, the court thought it significant that in the brief filed by the defendant on appeal there was a concession that if a screen had been used the injuries to the patient might not have been

so serious, "since only the smaller particles of glass would drop through the screen." The fact remarked the court that an available safety device could not entirely prevent an accident would not, of course excuse the chiropractor from employing it to minimize injuries.

The chiropractor contended that since there was no evidence of any other similar explosions having occurred or that any manufacturer of similar lamps has recommended screens as a precautionary measure he had no reason to anticipate such a fortuity as occurred or to take precautions to avoid it. We cannot hold as a matter of law, said the Supreme Court, that the chiropractor had no duty to take such precautions. We believe that the chiropractor's use of the lamp without a screen presented a question to be determined by the trier of fact on the issue of negligence. Glass articles such as electric light bulbs are fragile and are frequently broken from many and varied causes. The 1000 watt bulb used in this case was an exceptionally large one in comparison with an ordinary light bulb, and it was designed to generate heat. The likelihood of serious injury in the event of breaking whatever the cause, was obvious and was much greater than could be expected from the breaking of an ordinary illuminating bulb. As has often been said the care required must be in proportion to the danger to be avoided and the consequences that might reasonably be anticipated. The trial court might reasonably have concluded that the chiropractor should have anticipated that the bulb might break or be broken and that he did not take the precautions reasonably to be expected to avoid or minimize injury. The fact that the bulb broke or exploded in an unusual manner and that the exact cause of its doing so was unknown may be considered by the trier of fact but it does not necessarily follow that the chiropractor is as a matter of law free from liability. As is said in Restatement, Torts sec. 435

If the actor's conduct is a substantial factor in bringing about harm to another the fact that the actor neither foresaw nor should have foreseen the extent of the harm or the manner in which it occurred does not prevent him from being liable.

Furthermore, continued the court, accidents of this type are not entirely unknown, as at least two cases involving explosions of light bulbs have reached appellate courts. See *Hughes v Atlantic City & S. R. Co.* 85 N. J. Law 212, 89 A. 769, L. R. A. 1916 V. 927, *Russell v St. Louis & S. F. R. Co.*, Mo. App., 245 S. W. 590.

The Supreme Court accordingly held that the evidence with respect to negligence adduced by the plaintiffs at the trial was sufficient to present a question for the trier of fact and that the nonsuit should not have been granted. The judgment of nonsuit was accordingly reversed—*Croce v McBride* 143 P. (2d) 727 (Calif. 1944).

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL February 3, page 296.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS. Part I. Various centers. Feb. 1941. Part III. Various centers. June. Exam. Sec. Mr. J. S. Elwood. 225 S. 10th St. Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILIOLOGY. New York. June 5-9. Final date for filing application is March 12. Sec. Dr. George M. Lewis. 16 E. 60th St. New York 21.

AMERICAN BOARD OF OPHTHALMOLOGY. New York. June 13-16. Chicago. Oct. 4-6. Los Angeles. January. Sec. Dr. S. Jull. 10th & 1st Rd. Cape Cottage, Me.

AMERICAN BOARD OF OTOLARYNGOLOGY. New York. June 5-9. Final date for filing application is March 1. Chicago. Oct. 3-6. Sec. Dr. Dean M. Herle. University of Iowa City, Ia.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY. Chicago. May. Final date for filing application is Feb. 28. Sec. Dr. Walter Freeman. 1025 Connecticut Ave. N. W. Washington, D. C.

AMERICAN BOARD OF RADIOLOGY. Oral. New York. June 3. Final date for filing application is May 1. Sec. Dr. B. R. Kirlin, 102 110 Second Ave. N. W. Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY. Oral. Chicago. Feb. 1942. Sec. Dr. G. J. F. 110 1st St. W. S. Minneapolis, Minn.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1935 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia 208:561-700 (Nov.) 1944

- *Thiouracil in Treatment of Thyrotoxicosis: Clinical Experience with 37 Cases. E. Rose and Jeannette McConnell.—p. 561.
- Use of Penicillin in Topical Application. L. H. Sophian, with technical assistance of V. J. Connolly.—p. 577.
- *Penicillin, with Special Reference to Its Use in Infections Complicating Diabetes. F. B. Peck.—p. 581.
- *Treatment of Meningococcic Meningitis with Sulfamerazine. C. S. Oliver and D. G. Anderson.—p. 597.
- "Mega" Syndromes: Common Relation of Various Manifestations to Autonomic Nervous System. A. O. Wilensky.—p. 602.
- Protein Content of Edema Fluid in Patients with Acute Glomerulonephritis. J. V. Warren and E. A. Stead Jr.—p. 618.
- Obesity as Clinical Problem. T. S. Danowski and A. W. Winkler.—p. 622.
- Nutritional Improvement of Child Mentality. I. N. Kugelmass, L. E. Poull and E. L. Samuel.—p. 631.
- Salmonella Infection in Man: Report of 5 Cases with Autopsies in 2 Cases and Review of the Clinical Aspects. J. Sachs and W. Antine.—p. 633.
- Lesions in Rats Fed Sulfaguanidine in Purified Diets: Effects of Liver or "Folic Acid" Concentrate-Biotin Therapies. P. Gross, A. E. Axelrod and Milton D. Bosse.—p. 642.

Thiouracil in Thyrotoxicosis.—Thirty of 37 thyrotoxic patients observed by Rose and McConnell treated with thiouracil showed a favorable response, 4 a partial response and 2 no response. Three of the 6 patients showing an unsatisfactory response presented associated conditions which may have influenced their reactions. In 4 patients thiouracil was used during preparation for thyroidectomy. One of these died twenty hours after operation, but thiouracil was not regarded as a factor in his death. Necropsy in this case showed no lesions which could be associated with the use of the drug. The control of thyrotoxicosis with thiouracil in a 13 year old girl with diabetes mellitus was not followed by an increase in her carbohydrate tolerance or a decrease in insulin requirement. The microscopic appearance of the thyroid gland in patients prepared for thyroidectomy with thiouracil showed the hyperplasia and other changes previously reported by others. Eight patients have remained in remission for periods varying from three weeks to seven months following the complete withdrawal of thiouracil; on minimal doses 3 patients have responded likewise. Thirteen patients relapsed when the drug was either reduced in dosage or withdrawn; all of these patients again responded to readministration of thiouracil. Measurements of the cardiac output by ballistocardiogram of 9 patients showed a general tendency toward reduction in output under thiouracil therapy which was roughly parallel with the decline in basal metabolism. No evidence of development of refractoriness to thiouracil was observed. Untoward reactions attributable to the drug occurred in 8 cases. The most important of these was neutropenia with pharyngitis and fever, noted in 2 cases. Reduction in the size of the thyroid gland was noted in 8 cases after prolonged treatment. Exophthalmos tended either to remain stationary or to increase slightly. The drug effectively controls most of the phenomena of thyrotoxicosis in the large majority of cases. Its use is justified in the protracted treatment of mild or moderately severe cases and in the preparation of selected patients for thyroidectomy. It may also prove of considerable value for patients regarded as unacceptable surgical risks.

Penicillin in Infections Complicating Diabetes.—Peck reports 15 cases of diabetes which illustrate that penicillin is remarkably efficacious in the infectious type of gangrene, osteomyelitis of the bones of the feet and the huge sloughing car-

buncles. He never noted a deleterious effect on carbohydrate tolerance, nor has penicillin administration necessitated larger doses of insulin. The presence of infection notoriously increases the insulin requirement, but in none of the cases described was there any unusual difficulty.

Sulfamerazine in Meningococcic Meningitis.—Oliver and Anderson report the results obtained with sulfamerazine in 56 cases of meningococcic meningitis. All presented the typical clinical picture of meningitis, and in each case the diagnosis was confirmed by bacteriologic studies. The severity of the illness varied: 13 patients were regarded as mildly ill; in 24 the illness was of moderate severity; 19 were severely ill. The patients in the last group were either comatose or nearly so. A petechial rash was observed in 34 patients. The usual dosage of sulfamerazine employed in the adult group was an initial dose of 2 Gm. orally followed by a maintenance dose of 1 Gm. every eight hours. In children, dosage was calculated on a basis of 1 Gm. to 20 pounds (9 Kg.) of body weight per day. Comatose patients and those who were otherwise too ill or uncooperative to take medications by mouth were given the sodium salt of the drug intravenously. Treatment was continued until the patient had made a clinical recovery. The average duration of treatment was 8.4 days. As far as possible, daily determinations of the whole blood concentration of both the free and the total drug were made in all cases. Fluids were administered liberally. No deaths occurred. Complications of meningitis were observed in 8 cases. Except for 1 case of nerve deafness, the complications had cleared before discharge from the hospital. Except for 1 patient who experienced renal colic, no serious toxic reactions to sulfamerazine were encountered. The authors conclude that sulfamerazine is an effective agent in the treatment of meningococcic meningitis.

American J. Obstetrics and Gynecology, St. Louis

48:601-748 (Nov.) 1944. Partial Index

- Ovarian Fibromas and Theca Cell Tumors: Report of 78 Cases, with Special Reference to Production of Ascites and Hydrothorax (Meigs Syndrome). I. C. Rubin, J. Novak and J. J. Squire.—p. 601.
- Comparative Analysis of Drugs in Continuous Caudal Analgesia. G. S. McClellan and E. L. Williams.—p. 617.
- Placental Infarction as Diagnostic Criterion of Maternal Toxemia. J. H. Hill and W. K. Trimble.—p. 622.
- Application of Braxton Hicks Version in Modern Obstetrics. D. E. Reid and M. E. Anberg.—p. 630.
- Twin Pregnancies with 1 Twin Blighted: 2 Cases, with Comparative Study of Cases in Literature. J. E. Kindred.—p. 642.
- Conduct of Third Stage of Labor. C. T. O'Connor.—p. 683.
- Lymphogranuloma Venereum in Pregnancy. W. F. Finn.—p. 696.
- *Calcification in Cephalhematomata of Newborn Infant. J. E. Morgan.—p. 702.
- Influence of Epinephrine on Human Gravid Uterus. R. A. Woodbury and B. E. Abreu.—p. 706.
- Coexistent Ectopic and Uterine Pregnancy. H. E. Lawrence, B. Maine and D. E. Elsenore.—p. 709.
- *Supracervical Pregnancy Following Supravaginal Hysterectomy. Margaret Stanley-Brown and Frances E. Shields.—p. 714.
- Orthostatic Albuminuria Developing Late in Pregnancy. H. J. Simon.—p. 717.

Calcification of Cephalhematomas of Newborn Infants.—Cephalhematomas of the newborn infant are localized collections of blood beneath the periosteum of one of the bones of the cranial vault. They may be single or multiple. The entire periosteum covering the cranial bone is elevated. The swelling appears the first or second day after delivery and usually absorbs rapidly after the first week of life. Most of them are completely absorbed by the third week. The common plan of treatment is one of conservatism. An appreciable number calcify, forming a more or less permanent deforming lump on the child's head. While this lump is of importance only from the cosmetic standpoint, it causes the parents great concern. If absorption has not taken place by the end of the second week, the contents have usually liquefied and can be easily aspirated. If a fairly large bore needle is introduced beneath the elevated periosteum, from 10 to 40 cc. of thick bloody liquid can be withdrawn. The cyst then largely collapses; the small amount of remaining contents rapidly absorbs, and permanent deformity is prevented. If an aseptic technic is used, infection does not have to be feared. In the past five years Morgan has routinely aspirated those cephalhematomas which did not absorb rapidly and has had no complications.

Supracervical Pregnancy Following Supravaginal Hysterectomy.—According to Stanley-Brown and Shields, supracervical pregnancy following hysterectomy is a rare occurrence. The authors found reports of 6 cases of pregnancies following hysterectomies, to which they add 1 of their own observation. They report the history of a woman who had given birth to 2 children, 1 in 1934 and 1 in 1938. Later she developed menstrual disturbances, and in 1941 a fibroid was distinguished in the fundus. A hysterectomy was done in June 1943 because the fibroid had enlarged. The uterus was amputated at the uterocervical junction without removing the tubes and ovaries. The cervical stump was closed with four interrupted chromic sutures. The ligated tubes and round ligaments were sutured to the posterior lip of the cervical stump, and the bladder peritoneum was brought over to cover the area. The patient made an uneventful recovery. Following this the patient was well and had fairly regular, scanty monthly bleeding. At a consultation in March she stated that she had missed one period, was nauseated and had occasional lower abdominal pains. Examination in April showed a softer cervix and immediately above it a small, soft mass. The nausea increased and the picture duplicated that of her two previous pregnancies. An exploratory laparotomy was done. The bladder peritoneum was dissected free and laid back. Beneath the fold there appeared tissue which resembled placenta, and from this by blunt dissection a sac of fluid containing a $6\frac{1}{2}$ weeks embryo was shelled out intact. As much placental tissue as possible was removed, and the stump of the cervix was closed with chromic sutures. The patient made an uneventful recovery.

American Journal of Ophthalmology, Cincinnati

27:1193-1338 (Nov.) 1944

- Deep Chamber Glaucoma Due to Formation of Cuticular Product in Filtration Angle. A. B. Reese—p. 1193
 *Penicillin Therapy in Ocular Infections. J. G. Bellows—p. 1206
 Corneal Healing. Adhesive Power of Aqueous Humor in Rabbit. Preliminary Report. A. L. Brown and F. A. Nantz—p. 1220
 National Ophthalmologic Societies in United States. L. T. Post and H. C. Slaughter—p. 1225
 Tenotomy of Rectus Muscles in Glaucoma. S. Gartner and R. K. Lambert—p. 1228
 Association Between Retinopathies and Encephalopathies in Common Cardiovasculorenal Affections. D. J. Lyle—p. 1232
 Modification of Corneal Section in Operation for Cataract. An External Approach. J. H. Bailey—p. 1251
 New Goniotomy Lens. O. H. Liles—p. 1258
 Suppression versus Amblyopia. Marjorie V. Enos—p. 1266
 *Orthoptic Treatment of Phorias. M. F. McCaslin—p. 1272
 Noncomitant Hyperphorias Considered as Aberrations of Postural Tonus of Muscular Apparatus. A. Posner—p. 1275
 Morbidity of Trachoma. A. de Roth—p. 1279

Penicillin Therapy in Ocular Infections.—The concentration in the ocular tissues and fluids after administration of a large intravenous dose of penicillin is listed in decreasing order as follows: extraocular muscles, sclera, conjunctiva, blood, tears, chorioretinal layer, aqueous and vitreous humors and cornea. It has never been detected in the crystalline lens. Local application of penicillin leads to a high concentration of the drug in the tissues of the anterior segment of the globe. The following ointments in which the penetrability of penicillin was tested are listed in the order in which they are clinically recommended: simple ointment, oil-in-water emulsion and lubricating jelly. The "vanishing" stearate type of a base, in which penicillin seems to have the greatest power of corneal penetration, is not recommended because of its possible damage to the corneal epithelium. It may be used on the skin of the lids. For deep infections of the eye and retrobulbar tissues the parenteral route, although leaving much to be desired, is the only one available. Experimental studies demonstrated that a high concentration of penicillin can be achieved in the adnexa and tissues of the anterior segment, whereas the concentration within the posterior segment of the globe is, at the very best, minimal. As a corollary to this it might be expected that external ocular tissues, because of their accessibility, are readily cured by the use of this drug, whereas deep infections respond poorly or not at all. The correctness of this supposition is borne out by observations in 46 clinical cases reviewed by the author. He found that penicillin is effective in the clinical treatment of acute and chronic infections of the lids, conjunctiva and cornea produced by penicillin sensitive organisms. It was ineffective in 2 cases of exudative choroiditis and in 1 case of gonorrheal iridocyclitis.

Orthoptic Treatment of Phorias.—McCaslin stresses that ophthalmologists must give serious consideration to the phorias, since the patients in this group of "ocular imbalances" suffer great discomfort. The aviation industry has recognized the problem for several years; now industry in general has become conscious of its presence. The work of Tiffin and Kuhn proves that the accident increase is associated with high esophorias for distance and high exophorias for near work. Industry also is cognizant of the fact that it is far more economical to treat these employees than to train them for other types of work. These patients must first be subjected to a careful physical examination. Particular attention must be paid to the possible foci of infection, such as carious teeth, diseased tonsils and faulty habits of elimination; also the drinking habit. Following a thorough examination and refraction, a course of treatment is outlined to the orthoptist and the patient. Home treatment alone, even under the ophthalmologist's supervision, is not advocated. Few, if any, physicians have either the temperament or the time necessary to devote to the details of instruction and procedure that are required. The author has obtained excellent results working in conjunction with a well trained technician.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

52:353-458 (Oct.) 1944

- Radium Metabolism in Rate and Production of Osteogenic Sarcoma by Experimental Radium Poisoning. R. D. Evans, R. S. Harris and J. W. M. Bunker—p. 351
 *Intrathoracic Hodgkin's Disease. S. E. Wolpaw, C. S. Highty and H. Hauser—p. 374
 *Roentgenologic and Pathologic Aspects of Calcification of the Choroid Plexus. E. H. Wood Jr.—p. 388
 *Parasternal Diaphragmatic Hernia. M. Ritvo and O. S. Peterson—p. 399
 Bilateral Congenital Fusion of Carpal Capitate and Hamate. Case. E. H. White—p. 406
 Vertebral Anomaly. Probable Persistent Neurocentral Synchondrosis. H. C. March—p. 408
 Tracheocele. E. Addington, P. Rush and W. Cohen—p. 412
 Radiotherapy in Dupuy's Disease. M. O. Roca Nobre and R. R. De Araujo Cunha—p. 415
 Rapid Radium Implantation Method for Rodent Ulcer. A. A. Charteris—p. 423

Intrathoracic Hodgkin's Disease.—According to Wolpaw and his associates, of 55 proved cases of Hodgkin's disease in which chest roentgenograms were made 35 showed intrathoracic involvement. The varied manifestations of intrathoracic Hodgkin's disease were correlated with the distribution of lymphoid tissue within the chest. Mediastinal, parenchymal, pleural, osseous and cardiac types were described and illustrated by 15 case reports. Just as roentgen rays have long proved of value in the treatment of Hodgkin's disease of peripheral involvement, radiation therapy has also been useful in the management of Hodgkin's lesions involving the thorax. The response of mediastinal tumors to small doses of radiation constitutes a differential diagnostic test between the lymphoblastoma group and lesions of different nature. As experience demonstrated retrogressions of mediastinal nodes following roentgen therapy, attempts were made to produce similar results on Hodgkin's disease involving the thorax. While retrogressions cannot be obtained with the same regularity as in the treatment of peripheral lymph node involvement, symptoms have been relieved and the duration of life has been prolonged. General medical therapy in conjunction with radiotherapy is essential if the best results are to be obtained. Twenty-three of the 35 cases were treated with radiation. Seventeen cases considered adequately irradiated showed favorable response of varying degrees. Three patients with adequate and 2 patients with inadequate dosage showed no favorable response, and in 1 case there was no record of the result of treatment. Because of the high incidence of involvement of the lymphatic chains of the mediastinum and abdomen found at necropsy, it has become routine in many clinics to irradiate these regions in all cases of Hodgkin's disease even though the lesions are not demonstrable by clinical or roentgenologic examinations.

Calcification of Choroid Plexus.—Wood says that calcification occurs in the choroid plexuses probably for the most part through a process of proliferation of cells of the pararachnoid followed by the formation of a dense collagenous and fibrous reticular meshwork in which calcium salts become deposited. Calcification occurring in the glomera of the choroid plexuses in the lateral ventricles assumes various forms and is

frequently asymmetrical. Wood describes 2 cases in which roentgenographically demonstrable choroid plexus calcification occurred in unusual positions and at very early ages (children of $2\frac{1}{2}$ and 3 years). One case exhibiting punctate calcification in the region of the fourth ventricle is reported. Two cases are described in which a displaced calcified choroid glomus was the only evidence on the plain skull roentgenograms of an expanding intracranial lesion. The author also reports an unusual case of upward and backward displacement of the glomus of a choroid plexus by an aneurysm of the basilar artery.

Parasternal Diaphragmatic Hernia.—Failure of fusion of the costal and lumbar portions of the diaphragm, Ritvo and Peterson say, results in a persistent pleuroperitoneal hiatus or foramen of Bochdalek. Lack of fusion of the sternal and costal portions forms the so-called foramen of Morgagni, with development of the parasternal diaphragmatic hernia. Comparatively few cases of the latter type of diaphragmatic hernia have been reported. Parasternal diaphragmatic hernias have frequently been misinterpreted as thoracic neoplasms. The authors have made the diagnosis in 6 cases, the majority of these having been first demonstrated by roentgenography of the chest and definitely confirmed by studies of the gastrointestinal tract. It is not universally agreed whether these hernias are congenital or acquired. There usually is a peritoneal covering, as proved both by necropsy and at operation, indicating that the peritoneum had been completely formed and had closed off the abdominal cavity from the pleural space before the hernia had developed. It is not possible to explain the occurrence of this lesion on the basis of faulty fusion or malformation of the various components of the diaphragm. The hernia can frequently be diagnosed by anteroposterior and lateral roentgenograms of the chest. The presence of gas filled loops of colon above the diaphragm in the right lower lung field is pathognomonic. The occurrence of a rounded mass in the anterior portion of the right lung field inferiorly and adjacent to the heart border requires that parasternal hernia be considered the diagnosis until proved otherwise. The transverse colon and omentum are usually found in the hernia, although other portions of the intestine may also be present. There is narrowing of the loops of colon at the points where they pass through the diaphragm. Barium enema studies are more satisfactory than the opaque meal examination in the demonstration of the lesion. The treatment is conservative and expectant in most instances.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

28:661-816 (Nov.) 1944

- Local Chemical Prophylaxis of Experimental Syphilis with Phenyl Arsenoxides. H. Eagle, R. B. Hogan and R. Fleishman.—p. 661.
Abdominal Aneurysms: Report of 96 Cases. V. Scott.—p. 682.
Combined Efforts in Venereal Disease Control by Naval and Civilian Health Authorities. E. H. Harris and R. H. Abrahamson.—p. 711.
*Systemic Manifestations of Bismuth Toxicity: Observations on 4 Patients with Preexistent Kidney Disease. A. Heyman.—p. 721.
Syphilis Transmitted from Congenitally Syphilitic Child to His Own Father. H. Ingraham, M. D. Kingston and A. Hesse.—p. 733.

Systemic Manifestations of Bismuth Toxicity.—According to Heyman bismuth therapy is relatively safe. Its usual reactions are mild, consisting chiefly of pigmentation of the gums and buccal surfaces or, less frequently, an ulcerative stomatitis. The use of bismuth is not without danger; deaths have been observed following its injection. Excluding the accidental intravenous deposition of the drug, most of these fatalities are caused by the toxic effects of the drug on the liver or kidney. Jaundice or nephritis is noted in these cases and there is frequently an associated stomatitis, colitis or hemorrhagic diathesis. Although such serious systemic reactions are uncommon, 4 cases with severe visceral manifestations of bismuth poisoning have been seen at Grady Hospital within the past few years. With the kidney serving as both the chief reservoir and route of excretion of the metal, this organ is most likely to be affected in cases of bismuth poisoning; and renal damage has been an almost constant finding in animal experiments. Presence of preexistent renal damage may increase the likelihood of developing toxic reactions. This association has been noted by many observers and seems to have occurred in the patients whose histories are reported, each of them having had hypertension with evidence of renal disease prior to bismuth therapy.

Two of the 4 described cases had a fatal outcome. The author directs attention to the occurrence of bismuth melanosis and cervicovaginitis in 2 cases and reviews the literature on this condition. He discusses the role of bismuth in the production of renal insufficiency and the similarity of the renal lesions to those produced by animal experimentation. The relation of previous renal damage to bismuth toxicity is emphasized, and caution is advised in the treatment of such patients with bismuth.

Annals of Internal Medicine, Lancaster, Pa.

21:747-936 (Nov.) 1944

- *Differential Diagnosis of Terminal Glomerulonephritis and Malignant Hypertension: I. Renal Aspects. A. C. Corcoran and I. H. Page.—p. 747.
*Differential Diagnosis of Terminal Glomerulonephritis and Malignant Hypertension: II. Cardiac Aspects. R. C. Taylor, K. G. Kohlstaedt, A. B. Richter and I. H. Page.—p. 765.
*Rupture of Heart in Myocardial Infarction. Experience in Large General Hospital. S. Friedman and Paul D. White.—p. 778.
Rupture of Heart in Patients in Mental Institutions. W. W. Jetter and P. D. White.—p. 783.
Kerosene Intoxication. W. B. Deichmann, K. V. Kitzmiller, S. Withers and R. Johansmann.—p. 803.
Syndrome of Auriculoventricular Accessory Pathway. G. Kaplan and T. D. Cohn.—p. 824.
Syndrome of Paroxysmal Tachycardia with Short PR Interval and Prolonged QRS Complex, with Report of 2 Cases. J. R. Pearson and A. W. Wallace.—p. 830.
Choline as an Adjuvant to Dietary Therapy of Cirrhosis of Liver. A. H. Russakoff and H. Blumberg.—p. 848.
Primary and Secondary Myofibrosis: Clinical and Pathologic Study of 13 Cases of Fibrosis of Bone Marrow. L. A. Erf and P. A. Herbut.—p. 863.

Renal Aspects in Differentiation of Terminal Glomerulonephritis and Malignant Hypertension.—Differential diagnosis in patients showing severe renal damage from chronic glomerulonephritis on the one hand and malignant hypertension on the other has always been difficult, because at this stage the two conditions have in common the clinical pattern of hypertension, loss of weight, anemia, so-called albuminuric retinitis, depressed renal function, azotemia, proteinuria and increased organized urinary sediment. Corcoran and Page selected for study two groups of patients who had in common the evidences of disease noted and who had not, at the time of first observation, progressed to uremia with its coma, acidosis, and jactitation. They direct attention to diagnostic criteria derived from studies of renal function. They investigated the concentrating power of the kidneys, the urinary sediment, arterial pressure, hematocrit index and serum protein content. The studies were done on 10 patients from each group, selected because they presented the lowest levels of renal function observed in each series in the absence of the clinical syndrome of uremia. Terminal glomerulonephritis is distinguished by a low rate of glomerular filtration, of tubular secretory capacity and usually a higher rate of proteinuria than appears in malignant hypertension with renal failure. In spite of the lower level of renal excretory function in terminal glomerulonephritis, such patients survive more than four times as long as do patients with malignant hypertension in renal failure. The changes of renal function usually demonstrable in terminal nephritis are in accord with the structural changes in the kidneys in that they indicate glomerular and capillary lesions associated with great parenchymal destruction and fibrous replacement and suggest the frequent occurrence of large inequalities of function in the remaining nephrons. In malignant hypertension with renal failure intraglomerular hydrostatic pressure seems often increased and the flow of blood through the residue of intact tubular tissue is diminished, the latter presumably as the result of arteriolar constriction and (afferent) arteriolar sclerosis. In some of these patients, in spite of greatly increased arterial pressure and presumptive constriction of glomerular efferent arterioles, intraglomerular hydrostatic pressure seems not to be increased, or it is even low. This testifies to the severity of afferent arteriolar sclerosis or constriction in these patients. The conclusion is drawn that in these, as in patients with terminal glomerulonephritis, the implications of functional study agree with the structural changes caused by the disease. Evidence suggests that the hypoproteinemia of Bright's disease, whether it occurs during chronic glomerulonephritis or in malig-

nant hypertension with renal failure, apparently serves as a means of maintaining glomerular filtration when, in the absence of hypoproteinemia, the proportion of water filtered through the glomeruli would be grossly deficient or nil.

Cardiac Aspects in Differentiation of Terminal Glomerulonephritis and Malignant Hypertension.—In the comparison of the cardiac status of 10 patients with malignant hypertension in whom uremia was imminent with that of 10 patients with clinically similar chronic glomerulonephritis, Taylor and his associates found that 5 of the 10 patients with malignant hypertension developed clinical signs of heart failure in an average disease duration of five years, whereas only 1 patient with nephritis developed congestive failure in a group average of eleven years. In these two periods the same degree of cardiac enlargement developed in the two groups. In malignant hypertension the enlargement was primarily left ventricular and the aortas were long and tortuous. In nephritis the enlargement was globular and suggested dilatation. Electrocardiographic evidence of hypertensive heart disease is usual in malignant hypertension and rare in chronic nephritis. All of the patients with malignant hypertension had bizarre ballistocardiograms. This abnormality occurred in only 1 nephritic patient, in whom it was associated with heart failure. The blood pressure of malignant hypertension is usually higher, cardiac output is lower and peripheral resistance is greater, indicating more severe peripheral vasoconstriction or sclerosis or both as compared with chronic glomerulonephritis. The differential diagnosis between terminal malignant hypertension and terminal glomerulonephritis can be made by detailed study of the heart and circulation. Evidences of advanced heart disease are usual in malignant hypertension, whereas they are often indistinct or absent in nephritis.

Rupture of Heart in Myocardial Infarction.—Friedman and White attempted to determine the frequency and circumstances of rupture of the heart in a large general hospital. They found that cardiac rupture occurred in 10 cases, or 3.7 per cent, of a series of 270 instances of myocardial infarction found among nearly 3,000 necropsies at the Massachusetts General Hospital from 1933 through 1940. The 10 cases of cardiac rupture were found among the 105 patients with acute myocardial infarction (9.5 per cent) and none among the 165 cases of old infarction. The average age of the 10 patients was 65.7 years and the sex incidence was 7 males and 3 females. Death always ensued quite rapidly after the rupture, as evidenced by the state of the blood in the pericardial sac and the condition of the lacerated tissue. All 10 deaths occurred in less than two weeks after the clinical onset of acute myocardial infarction, most of them within a period of two to ten days after the illness began. In 8 of the 10 cases the descending branch of the left coronary artery and the anterior wall of the left ventricle were involved. In 1 case the circumflex branch of the left coronary was thrombosed and in the remaining case the circumflex branch of the right coronary.

Archives of Internal Medicine, Chicago

74:311-412 (Nov.) 1944

- *Diagnosis and Treatment of Chronic Coccidioidomycosis. E. J. Denenholz and G. Cheney.—p. 311.
Nature and Time Action of Modifications of Protamine Zinc Insulin. A. R. Colwell.—p. 331.
Effect of Sulfonamide Compounds on Transient Bacteremia Following Extraction of Teeth: I. Sulfanilamide. R. S. Pressman and I. B. Bender.—p. 346.
*Intercapillary Glomerulosclerosis. T. C. Laipply, O. Eitzen and F. R. Dutra.—p. 354.
Meningococcal Meningitis in Santiago, Chile, 1941 to 1943: An Epidemic of 4,464 Cases. A. Horwitz and J. Perroni.—p. 365.
Incidence of Fatty Liver in Tuberculosis, with Special Reference to Tuberculous Enteritis. J. M. Jones and W. M. Peck.—p. 371.
Recent Advances in Physiology of the Thyroid and Their Clinical Application. S. Soskin and R. Levine.—p. 375.
Adrenal Amyloidosis. Marguerite G. Stemmerman and O. Auerbach.—p. 384.
Syphilis: Review of Recent Literature. C. F. Mohr, V. Jett, R. D. Hahn, E. G. Clark and J. E. Moore.—p. 390.

Chronic Coccidioidomycosis.—Denenholz and Cheney show that, with military movement, soldiers trained in areas in which coccidioidomycosis is endemic may exhibit the manifestations of chronic coccidioidal infection in localities far removed

from the site in which the infection was originally acquired and in regions where this diagnosis is rarely considered. It is therefore highly important that medical officers be familiar with the chronic or residual manifestations of this disease. The authors have been particularly interested in the chronic phase of primary coccidioidomycosis and in disseminated coccidioidal infection, as the patients they observed have come under their care weeks to months after the illness first manifested itself. This report is based on observation of 14 patients proved to have clinical coccidioidomycosis and of 30 patients for whom the diagnosis was proposed but not confirmed. Of the 14 patients for whom the diagnosis was proved, 10 had primary benign and 4 had progressive disseminated coccidioidomycosis. Clinical study revealed the value and the limitations of the recognized diagnostic procedures, including investigation of the patient's history, physical examination, cutaneous and serologic tests with coccidioidin, culture and animal inoculation rate and roentgen examination. The case reports herein cited illustrate the common diagnostic errors and pitfalls that may be encountered in the clinical study of patients suspected of having coccidioidal infection. The authors found that medicinal treatment usually has little effect on this disease and that the primary consideration of therapy is rest in bed to aid focalization of the infection. Immobilization of the lung by a lead shot bag on the chest, which was used on some patients in this series, is a procedure not previously utilized and appeared to be of some benefit in helping to close the thin walled cavities caused by the coccidioidal infection. Acridine dyes (acriflavine hydrochloride and quinacrine hydrochloride) were tried but proved of no value. From a military standpoint, even though these patients with chronic coccidioidal infection may require long periods of hospitalization, they may often be returned to useful military service.

Intercapillary Glomerulosclerosis.—The association of intercapillary glomerulosclerosis with a distinct clinical syndrome was first pointed out by Kimmelstiel and Wilson in 1936. The characteristic symptom complex consisted of a history of diabetes mellitus, widespread edema of renal origin and pronounced albuminuria. Frequently hypertension and renal insufficiency were also present. The renal lesion was characterized by focal hyalinization of the intercapillary connective tissue and was named intercapillary glomerulosclerosis. Laipply and his associates aimed to determine the incidence of intercapillary glomerulosclerosis and to correlate its occurrence and development with distinctive clinical manifestations. For this purpose the clinical records, necropsy protocols and microscopic sections of 332 patients were examined. They arrived at the following conclusions: 1. At necropsy intercapillary glomerulosclerosis is a common lesion in diabetic persons and an uncommon one in nondiabetic persons. 2. It is more specific than hyalinization of the pancreatic islets as an indication of diabetes mellitus. 3. Because of its high incidence and clearcut character, it is at present the most reliable criterion available for the post-mortem diagnosis of diabetes mellitus. 4. There is no demonstrable relation between the degree of its development and the duration or degree of the diabetes. 5. It is not necessarily associated with hypertension, albuminuria, renal arterial and arteriolar sclerosis, uremia or the nephrotic syndrome. 6. The nephrotic syndrome is not a common accompaniment. It occurred in only 6.3 per cent of the diabetic patients with intercapillary glomerulosclerosis.

Archives of Otolaryngology, Chicago

40:333-432 (Nov.) 1944

- Fractures of Temporal Bone. G. Kelemen.—p. 333.
Traumatic Deafness in Combat Fliers. E. V. Ullmann.—p. 374.
Complications of Otitis Media and Their Treatment. L. E. Koelbe and J. J. Potter.—p. 382.
Lymphangitis of Retropharyngeal Lymphatic System. J. M. Robinson.—p. 385.
Malignant Tumors of Nasal Cavity: Report of 8 Cases in Which a Frontotomoid Approach Was Employed. F. Z. Havens and W. C. Thornell.—p. 396.
Use of Radon to Prevent Otitis Media Due to Hyperplasia of Lymphoid Tissue and Barotrauma (Aero-Otitis). E. P. Fowler.—p. 402.

Journal of Aviation Medicine, St. Paul

15:297-352 (Oct) 1944

- Physiologic Investigation of Events Occurring when Changing from Oxygen to Air at 35,000 Feet A Hemmings—p 298
- Cardiovascular "Blackout" Test H S Mayerson—p 304
- *Decompression Sickness: Nature and Incidence of Symptoms During and After Artificial Decompression to 38,000 Feet for Ninety Minutes with Exercise During Exposure L V. Bridge, F M Henry, S. F. Cook, O L Williams, W R Lyons and J H Lawrence—p 316
- Depth Perception as Aid in Selection of Fighter Pilots J W Mills—p 325
- Mixingopuncture for Reduced Intracranial Pressure: Report of Pressure Chamber Experiments N Cruikshank and G H Baleman—p 340
- Terror of the Heights R W Perry—p 344

Decompression Sickness.—According to Bridge and his associates decompression sickness, or aetioembolism, is an acute disease with many manifestations produced by exposure to reduced atmospheric pressure. They analyze 167 man runs made by the 80 subjects doing 10 set ups every five minutes for ninety minutes in a decompression chamber at a simulated altitude of 38,000 feet. Eighty-five man runs (50.9 per cent) terminated prematurely in forced descent. The major cause was joint pain, of less importance were chokes, abdominal gas pain and hyperventilation. The remaining 95 per cent of descents were due to muscle pains, syncope reactions and the like. Joint pains, with or without descent, occurred in 62.3 per cent of all man runs and were reported about equally for the two sides of the body. Pain in the knee (the joint most frequently affected) occurred in 53.9 per cent of all runs. The high incidence of pain in the anterior portion of the knee as compared with other regions of the knee was statistically significant. This seemed reasonable in view of the movements involved in the exercise. If knee pain recurred on successive flights, it was likely to appear in the same knee. Moderate and severe chokes were associated with joint pain in a significant number of instances. Postflight symptoms referable to joints affected at altitude occurred after more than 15 per cent of all runs. Nearly 26 per cent of those having joint pain at altitude had trouble with those joints during the postflight hours, and nearly half of these were joint swellings, probably representing synovial or bursal effusion. Postflight symptoms were reported for a few joints and muscles not affected at altitude.

Journal of Experimental Medicine, New York

80:341-454 (Nov.) 1944. Partial Index.

- Experimental Typhus Infection in Eastern Cotton Rat (*Sigmodon hispidus hispidus*) C R Anderson—p 341
- Further Observation on Relation of Eve to Immunity in Experimental Syphilis II Development of Immunity After Primary Intra-ocular Inoculation A M Chesney and A C Woods—p 357
- Device for Automatically Controlling Concentration of Glycol Vapors in Air. T. T. Puck, H. Wise and O. H. Robertson—p 377.
- Polyomyelitis by Accidental Contagion in Chimpanzee H A Howe and D Bodian—p 383
- Studies on Nonhemolytic *Streptococcus* Isolated from Respiratory Tract of Human Beings III Immunologic Relationship of *Streptococcus MG* to *Streptococcus Salivarius* Type I G S Muck, L Thomas, E C Curnen and F L Horsfall Jr—p 431
- Studies on Mammary Tumors of Dogs I Lactation and Influence of Ovariectomy and Spayectomy Thereon C Huggins and P. V. Moulder—p 441

Journal Industrial Hygiene & Toxicology, Baltimore

26:281-318 (Nov.) 1944

- Radon/Carbon Dioxide Ratio as Index to Excessive Radium Absorption F E Hoecker—p 281
- Significance of Absorbed Radium as Indicated by Coefficient of Elimination F E Hoecker—p 289
- Studies on the Toxicity of Commercial Benzene and of a Mixture of Benzene, Toluene and Xylene V. H. Hough, F. D. Gunn and S. Freeman—p 296
- *Introduction of Glycols for Air Sterilization by New Vaporization Method E Bigg and B H Jennings—p 307
- Dermatitis Due to Vinyl Carbazole I R Tabershaw and J B Skinner—p 313
- Welding Fume Sampler L Silverman and J T. Fge Jr—p 316

Glycols for Air Sterilization.—Bigg and Jennings developed a practical means for the introduction of measured quantities of glycol into the atmosphere. They describe an apparatus of simple construction and operation which may be used for this purpose. The device was designed to introduce simultaneously, at predetermined rates, both water and glycol into the

air, thus eliminating the necessity of using a separate system for humidification. It is possible to accomplish this by boiling glycol-water solutions. The proportion of glycol and water vaporized in this manner will depend on their respective concentrations in the liquid phase, and the rate of introduction into the air will be determined by the heat input (rate of boiling). The practicality of this method has been fully demonstrated in field trials. The method eliminates fire hazards, regulates desired humidities, may be built at a nominal cost and is flexible in its application and simple in operation. Glycol vapor introduced in this manner is equal in bactericidal activity to that produced by other methods.

Journal of Lab. and Clinical Medicine, St. Louis

29:1109-1210 (Nov) 1944

- Choline Deficiency Studies in Dogs J. M. McKibbin, S. Thayer and F. J. Stare—p 1109
- Lysocleithin and Antihemolytic Value of Blood H B. Collier and K M. Wilbur—p 1123
- Effect of Humidity and Temperature on Oxygen Toxicity. H. R. Hulpeu and V V Cole—p 1134
- *Variability of Heart Rate and Blood Pressure in Selected Groups of College and High School Students Elizabeth P. Salit and W. W. Tuttle—p 1139
- *Oscillometer and Thermocouple as Diagnostic Aids in Peripheral Vascular Disease C Moscos and M B Ferderber—p 1147.
- Study on Relationship of Blood Iscagglutinin Titers to Total Serum Protein Concentration A P Rowe, Alice McBride and S. R. Mettier—p 1156
- Study of *Staphylococcus Antitoxin* Titers in Normal Human Sera D S Seely, P F Stookey and N. P. Shernood—p 1162.

Variability of Heart Rate and Blood Pressure in Students.—Salit and Tuttle point out that, if cardiovascular measures are to be used to identify persons in good and poor physical condition or to measure progress during the course of a training program, these measures must have reliability and discriminatory power. They report investigations to determine which of several commonly used cardiovascular measures are most reliable. The studies were made on college men and women and on high school boys. The authors found that the pulse after a standard exercise is a more reliable measure than the resting pulse, but the resting systolic blood pressure is a more reliable measure than the systolic pressure after exercise. Even when conditions are carefully controlled, an individual's heart rate and blood pressure are so variable from day to day that a number of determinations must be made if his general status is to be established. Cardiovascular tests in general have little discriminatory power because the differences in scores among individuals are small in relation to individual variability. Individuals can more clearly be distinguished from one another on the basis of postexercise pulse rates than on the basis of resting heart rate or the increase due to moderate exercise. The same is true of postexercise systolic and diastolic blood pressures. The relative efficiency of heart rate scores in distinguishing individuals from one another has been demonstrated in terms of the percentage of significant differences among individuals in a group. Whereas only 8 per cent of the differences in the resting pulse for the 20 men in this experiment are significant at the 1 per cent level of confidence, 41 per cent of the differences in pulse one-half minute after exercise are significant at this level. The corresponding figures for the women are 25 per cent and 32 per cent. At the 5 per cent level of confidence, 62 per cent of the differences in pulse after exercise are significant among the men; among the women only 53 per cent of the differences are significant at this level of confidence.

Oscillometer and Thermocouple in Diagnosis of Peripheral Vascular Disease.—Moscos and Ferderber recorded the evidence obtained by various diagnostic procedures and correlated this evidence with the circulation in the extremities examined. Observations were made on 102 persons. This group included 48 normal subjects, 8 asymptomatic, 6 with thromboangitis obliterans and 28 with arteriosclerosis. Observations as to history, symptoms, physical signs, oscillometric readings, skin temperatures, blood flow and vibratory sensation were noted and the results tabulated. While in arteriosclerosis of the lower extremity symptoms referable to the calf were most common, pain was noted almost as frequently in the ankle, arch, dorsum or toes. Numbness, tingling, burning, aching and rest pain were symptoms noted almost as frequently as inter-

mittent claudication in arteriosclerotic vascular diseases. A feeling of local fatigue was often the first sign of vascular disease. Arteriosclerotic rest pain was often relieved by moderate exercise. The pain of thromboangiitis obliterans was not relieved by exercise. Normal distribution of the hair over the lower extremity was noted in only 25 per cent of the patients with vascular disease. Rubor, cyanosis or pallor of an extremity may be present in the absence of arterial vascular disease. The absence of the dorsalis pedis or posterior tibial pulsation did not exclude vascular disease. The oscillometric readings were not necessarily found to be decreased in arteriosclerotic peripheral vascular disease; normal individuals with heavy musculature may have diminished oscillometric readings. Normal skin temperatures may obtain in individuals with vascular disease. Estimation of the blood flow by Stewart's calorimetric method indicated that the blood flow in patients with vascular disease averaged about two-thirds that in normal subjects. Estimation of the vibratory sense by the method of Barach yields confirmatory evidence of deficient circulation but is of little early diagnostic value. The arteriovenous anastomoses are suggested as one mechanism partially explaining the variations in skin temperature that occur in normal individuals and those with peripheral vascular disease.

Journal of Mount Sinai Hospital, New York

11:185-252 (Nov.-Dec.) 1944

- Studies on Natural History of Poliomyelitis. A. B. Sabin.—p. 185.
Hodgkin's Disease of Skin. O. L. Levin and H. T. Behrman.—p. 207.
Immunologic Approach to Studies on Certain Diseases of Eye. G. Schwartzman.—p. 211.
Life's Later Years: Studies in Medical History of Old Age. F. D. Zeman.—p. 224.
Essays on Biology of Disease: Chapter 6. Biology of Polycythemia Vera. E. Moseheowitz.—p. 232.
Massive Pulmonary Embolism: III. Based in Part on Study of 88 Fatal Cases. H. Neuhof and S. H. Klein.—p. 236.

Journal of Nervous and Mental Disease, New York

100:449-554 (Nov.) 1944

- Endocrine Glands in Infantile Amaurotic Family Idiocy. O. Marburg.—p. 450.
Unusual Rapid Evolution in Guillain-Barré Syndrome with Bulbar Palsy. A. A. Briskier.—p. 462.
Pangramic Position of Psychiatry. A. N. Fine.—p. 466.
Hebephrenic Fancies: Their Relation to Two Basic Crime Trends: Incest and Parricide. B. Karjman.—p. 480.
Green Ink. W. Rottersman.—p. 507.

Journal of Neurosurgery, Springfield, Ill.

1:365-456 (Nov.) 1944

- *Eosinophilic Granuloma of Skull: Report of Case. J. B. Campbell and E. Alexander Jr.—p. 365.
Symptomatology of Acoustic Tumors, with Special Reference to Atypical Features. A. Olsen and G. Horrax.—p. 371.
*Post-Traumatic Headache. C. Brenner, A. P. Friedman, H. H. Merritt and D. E. Denny-Brown.—p. 379.
Method of Holding Galea Hemostats in Craniotomies. F. A. Kantrowitz.—p. 392.
Mechanism of Head Injury as Studied by Cathode Ray Oscilloscope: Preliminary Report. E. S. Gurdjian and H. R. Lissner.—p. 393.
Technology of Nerve Regeneration: Review. Sutureless Tubulation and Related Methods of Nerve Repair. P. Weiss.—p. 400.

Eosinophilic Granuloma of Skull.—According to Campbell and Alexander, eosinophilic granuloma of bone is a relatively rare condition affecting chiefly children and young adults, usually males. The lesion is benign, may be solitary or multiple and in more than half the recorded cases has affected the cranial vault. Although the x-ray film of this lesion is suggestive, a diagnosis cannot be made without biopsy and microscopic study. Eosinophilic granuloma usually starts as a well localized lesion in the medullary cavity, tending to erode, expand and perforate the cortex. In the calvarium it may erode either inward or outward, and several cases have been recorded in which a considerable area of the dura underlying the bone lesion has been directly involved. There have not been cases in which the brain has been involved, nor does the tumor apparently have any tendency to erode into blood vessels. Grossly the tumor appears soft, is sometimes quite hemorrhagic and gives the impression of being malignant. Microscopically the picture varies considerably from case to case, apparently depending on the length of time the lesion has been present. As a rule the

lesion is characterized by the presence of compact aggregates of large phagocytic cells, called histiocytes by some, with conspicuous collections of eosinophils. The eosinophils may be such a prominent feature as to stain the entire field red to first inspection in a hematoxylin and eosin stained slide. There is an intimate pathologic relationship of this lesion to Schüller-Christian disease and Letterer-Siwe disease. The prognosis of eosinophilic granuloma is almost universally favorable. Cases of spontaneous healing have been recorded. Other patients have been apparently cured by surgical extirpation, curettage and x-ray therapy. The authors observed eosinophilic granuloma in the left frontal bone of a soldier stationed in the South Pacific theater. The tumor was extirpated and the wound healed by primary intention. Later, at a hospital in the United States, the skull defect was covered with a tantalum plate.

Post-Traumatic Headache.—Brenner and his associates report observations on 200 consecutive hospitalized patients with head injury between the ages 15 and 55 years who were followed from the time of injury for a period of six or more months. One hundred and thirty-eight patients complained of post-traumatic headaches, 63 patients of headaches lasting longer than two months and 59 patients of headaches that did not persist beyond the hospital stay. In 11 patients the headaches began after discharge from the hospital. Post-traumatic headaches are regularly intermittent. They may be precipitated by postural changes, effort, fatigue or emotional upsets, or they may appear without relation to any such factors. They are characteristically variable from patient to patient with respect to severity, character of pain and localization. Headaches lasting for longer than two months were associated with dizziness and nervous symptoms (fears, anxiety, fatigue, irritability and/or inability to concentrate). The incidence of such prolonged headaches was high among patients with nervous or neurotic symptoms prior to injury, with complicating environmental factors (including compensation), with symptoms of immediate emotional reaction to the injury and with scalp lacerations; it was low among recreational accidents and among patients with very mild head injuries. These relationships suggest the importance of both psychologic and physical factors. Even in headache localized to the region of known damage to scalp or skull, psychologic factors had high correlation. A striking liability of headache localized to the site of previous scalp injury to provocation by posture or physical effort provides evidence that such provocation in more diffuse types of headache indicates underlying structural damage. A liability of provocation by histamine, particularly when the headache has been unilateral, suggests that intracranial localized vascular or perivascular change may occur. Neither changes in the spinal fluid, in the electroencephalogram, in the reflexes, in the degree or extent of scalp or cranial injury nor in the extent of disorder of consciousness immediately after the injury give adequate prognosis of subsequent liability to headache. Headache was, however, significantly less common in those who had no initial disorder of consciousness.

Journal of Pediatrics, St. Louis

25:369-460 (Nov.) 1944

- Reevaluation of Pneumonias of Infancy. J. M. Adams.—p. 369.
Experience with Sulfapyridine in Children. H. N. Vandergrift.—p. 386.
Roentgen Studies of Heart in Asthmatic Children. V. J. Derbes and H. T. Engelhardt.—p. 394.
*Intravenous Feeding of Complete Diet in Child: Report of Case. F. W. Helfrick and N. M. Abelson.—p. 400.
Accidental Mechanical Suffocation in Infants. H. Abramson.—p. 404.
Use of Prostigmine and Modified Kenny Technique in Treatment of Poliomyelitis. G. J. Bones.—p. 414.
Goat's Milk Anemia: Report of Case. Emeline M. Perkins.—p. 439.
Congenital Lung Cyst Complicated by Pyopneumothorax. M. J. Carson and A. Webb Jr.—p. 445.
The Lashley Quadruplets. J. W. Bruce and E. P. Scott.—p. 447.

Intravenous Feeding of Complete Diet in Child.—Helfrick and Abelson present the history of a 5 month old infant with Hirschsprung's disease, a digestive upset and upper respiratory disease. The infant developed the extreme picture of marasmus, which gave every indication of an impending fatal termination. The baby was given a complete intravenous feeding for five days with fats, carbohydrate and amino acids in proportions and quantities recommended in a normal infant's

diet. There was a prompt dramatic improvement in the nutrition, permitting eventual successful treatment of the Hirschsprung's disease with neostigmine. The authors believe that this is the first case on record of complete feeding by vein alone for a significant period. The success in this child suggests strongly that total feedings by vein can be a practical and life saving procedure, especially applicable to children who are marasmic or are unable to handle an adequate diet by mouth, or in whom it is desirable to withhold oral feedings for therapeutic purposes.

Maine Medical Association Journal, Portland

35:207-222 (Nov.) 1944

*Penicillin in Treatment of Sulfonamide Resistant Gonorrhea. R. Wigh and G. I. Geer Jr.—p. 207
The Physician and Control of Gonorrhea in the Armed Forces. E. M. Cohart and O. F. Hedley.—p. 210
Doctor's Laboratory. A. J. Fuller.—p. 211.

Penicillin for Sulfonamide Resistant Gonorrhea.—Wigh and Geer present a report of 191 consecutive cases of sulfonamide resistant gonorrhea treated at a station hospital. A patient was considered sulfonamide resistant if he had not responded to the following minimal dosage schedules: one duty course of sulfathiazole or sulfadiazine consisting of 1 Gm. of the drug four times daily for five days (20 Gm.) plus one hospital course of either drug, beginning with 4 Gm followed by 1 Gm every four hours, day and night, for five days (33 Gm.). The average duration of disease was 1.7 months. The average amount of sulfonamides a patient had received was 88 Gm. Injections of 10,000 units of penicillin in 3 cc. of water were administered intramuscularly into the gluteal region. Two schedules of treatment were used. All patients initially received a total of 50,000 Oxford units. This was administered in five doses at three hour intervals. The second schedule was used only for those patients who were clinical failures after the first schedule. It consisted in the injection of a total of 100,000 units in ten individual hourly doses. Patients not cured by these two schedules were given fever therapy. There were no systemic reactions to the penicillin. Eighty-nine per cent of the 191 patients were cured with 50,000 units of penicillin. Retreatment of the 21 failures with an additional 100,000 units resulted in cures in 98.95 per cent of the entire group. Two patients did not respond to a total of 150,000 units. A large proportion of those requiring an additional 100,000 units had complicated gonorrhea. Although 50,000 units of penicillin will cure most patients with gonorrheal manifestations other than urethritis, it is not possible to predict which patients will need larger dosages than 50,000 units. Proportionately more Negro than white patients are cured with 50,000 units of penicillin.

Medical Annals of District of Columbia, Washington

13:399-438 (Nov.) 1944

Maintaining Morale in Fighting Men at Sea. A. W. Clarke.—p. 399.
Present Concepts of Military Surgery. N. T. Kirk.—p. 405.
Malaria Problem. L. L. Williams Jr.—p. 408.
Dysenteries. F. S. Cheever.—p. 412.

Minnesota Medicine, St. Paul

27:873-968 (Nov.) 1944

Röntgenologic Diagnosis of Skeletal Diseases of Infants and Children. R. S. Bromer.—p. 895.
Local Anesthesia in General Practice. S. R. Maxeiner.—p. 904.
Intravenous Anesthesia. R. T. Knight.—p. 906.
Anesthesia and Breathing. R. M. Waters.—p. 909.
Some Recent Activities of American Medical Association. H. L. Kretschmer.—p. 913.
Volvulus in Newborn. Report of 5 Fatal Cases. R. P. Buckley and A. H. Wells.—p. 916.

Missouri State Medical Assn. Journal, St. Louis

41:215-230 (Nov.) 1944

Neurocirculatory Asthenia. J. T. King.—p. 215.
Some Remarks on Coronary Sclerosis. R. Uhlmann.—p. 218.

41:231-247 (Dec.) 1944

Experimental Diabetes. D. R. Black.—p. 231.
Underlying Principles in the Dietary Management of Diabetes. B. Y. Glassberg.—p. 233.
Use of Slow Acting Insulin. J. Irving.—p. 234.

Nebraska State Medical Journal, Lincoln

29:329-364 (Nov.) 1944

Prevention and Treatment of Infection in Compound Fractures. G. A. Caldwell and M. F. Kepl.—p. 333.
Advances of Chemistry as Applied to Human Nutrition. H. C. Aron.—p. 338.
Late Postpartum Bleeding. G. E. Peters.—p. 342.
Binocular Parasitic Invasion of Vitreous Body. J. N. Stoops.—p. 346.
Newer Aspects of Malaria. M. H. Brodkey.—p. 348.

29:365-396 (Dec.) 1944

Advances in Blood Vessel Surgery. R. W. McNealy.—p. 369.
Some Experiences with Serious Meningitis in Children. L. E. Holt Jr.—p. 373.
Local Anesthesia in Cesarean Section. L. S. McGoogan.—p. 377.
Cardiac Evaluation on Routine Examination. C. F. Shaffer.—p. 383.

New England Journal of Medicine, Boston

231:639-668 (Nov. 9) 1944

Hodgkin Disease. III Symptoms and Course. H. Jackson Jr. and T. Parker.—p. 639.
Venereal Disease as a War Injury. O. F. Cox.—p. 646.
Surgical Experiences with Wounded of Buna Campaign. A. Thorne.—p. 649.
Antibiotics and Bacteriostatics in Blood and Body Fluids. W. T. Salter.—p. 651.

231:669-696 (Nov. 16) 1944

Postwar Planning in Anesthesiology. H. S. Ruth.—p. 669.
Abnormal Physiology of Chronic Pulmonary Emphysema. A. F. Goggio.—p. 677.
Pancreatic Lithiasis with Associated Intestinal Hemorrhage: Case. H. Fanger.—p. 678.
Treatment of Gout. W. Bauer and F. Klemperer.—p. 681.

231:697-720 (Nov. 23) 1944

*Primary Atypical Pneumonia of Unknown Etiology. S. Gundersen.—p. 697.
Native Medical Practices in Southwest Pacific. R. A. Dillon.—p. 701.
Simplified Method for Culturing Fungi from Scalp. E. Bernhardt.—p. 703.
Industrial Hygiene in 1944. I. R. Tabershaw and M. Bowditch.—p. 706.

Primary Atypical Pneumonia of Unknown Etiology.—Gundersen says that from January 1942 to February 1944 inclusive 162 patients with a final diagnosis of primary atypical pneumonia were seen at his hospital. In all of them there was a confirmation of the diagnosis of pneumonia by x-ray examination. In this analysis 122 cases, including 3 fatal cases, 2 of which came to necropsy, are used. Cough, headache, malaise and sore throat were the most frequent symptoms in the order named. Shaking chills were relatively infrequent. Cough was often slow in development. In most cases it was explosive, hacking and distressing; in the average case it gradually became productive of small amounts of mucopurulent sputum. Of great importance for the differential diagnosis was the complete absence of typical pleuritic pain and of "prune juice" or rusty sputum. The term "atypical pneumonia" is particularly appropriate in relation to the question of physical findings, which were few. The sputum was examined in every case. Eighty-two cases showed many organisms in the cultures, with no one of them predominating. Typable pneumococci were found in small numbers in only 4 of 77 cases examined for this purpose. Sulfonamides were given as a therapeutic and diagnostic test in 63 cases without perceptible beneficial effect. The diagnosis of pneumonia was confirmed by x-ray examination in all cases. Patchy areas of infiltration with indistinct borders were considered most typical, but several cases of distinctly lobar consolidation were seen. Accentuation of the lung markings, giving a streaked appearance of the involved area, was more pronounced than it is in most cases of bacterial pneumonia. A few of the x-ray films taken separately and without regard for follow-up study could easily have been interpreted as indicating pulmonary tuberculosis. In addition to providing bed rest, good nursing care and adequate intake of fluids and salt to combat unusual loss from sweating, the treatment was directed toward relief of the most annoying symptoms. Inhalations of steam, expectorants containing iodine and codeine afforded the best relief from cough, especially in the early stages. Salicylates, with or without codeine, gave fair relief from headaches. Hot gargles or irrigations of saline or weak perborate solutions were frequently used for sore throats. In the first fatal case the poor response to treatment was possibly due to the blood

changes resulting from infectious mononucleosis. The second fatal case gave a history of pneumonia eight months previously. The third patient who died had suffered from asthma for a long time and was an alcohol addict.

New Orleans Medical and Surgical Journal

97:197-242 (Nov.) 1944

- Management of Certain Types of Fractures Involving Shaft of Long Bones F. W. Carruthers—p. 197.
Chenotherapy, Local and Systemic, and Its Relationship to Fundamental Requirements of Compound Fractures H. W. Orr—p. 201.
Status Endocrinologicus. L. B. Shpiner—p. 205.
Blood Transfusion Substitutes Present Status G. A. Nicol—p. 211.
Further Observations on Carcinoma of Stomach in a Large General Hospital, with Special Reference to 134 Nonsurgical Fatalities from Charity Hospital of Louisiana at New Orleans F. F. Boyce—p. 217.

Pennsylvania Medical Journal, Harrisburg

48:97-192 (Nov.) 1944

- Presidential Address W. Bates—p. 111.
Malignant Neutropenia C. B. Reitz—p. 116.
Clinical Experiences with Pemellin W. J. Staunby, H. L. Foss and J. F. Drumheller—p. 119.
Diagnostic Delay in Gastric Carcinoma G. C. Engel—p. 126.
Value of Medical Service in Small Industrial Plant G. S. Everts—p. 134.

Psychiatric Quarterly, Utica, N. Y.

18:547-728 (Oct.) 1944

- Malarial Treatment for General Paresis in Presence of Pulmonary Tuberculosis H. Pleasure—p. 547.
Disorders of Male Sexuality as Encountered in Practitioner's Office. W. Ehrnsberg—p. 567.
Intramural Hearings on Writs of Habeas Corpus H. J. Worthing and N. J. T. Bigelow—p. 582.
*Interpretation of Divergent Outcome of Schizophrenia in Identical Twins. S. Arieti—p. 587.
Amnesic Syndrome with Short Remissions During Electric Shock Treatment H. J. Kleinschmidt—p. 600.
*Psychosomatic Aspects of Allergy L. J. Karnosh—p. 618.
Objective Approach to Personality and Environment in Homosexuality. C. H. Jones—p. 626.
Clinical Experiment with Methylnitrosamide Sulfate S. Feinstein—p. 642.
Pulmonary Edema and Electrocardiographic Findings Resembling Coronary Occlusion in Insulin Treatment Case A. Gralnick—p. 650.
Prevention of Major and Minor Complications in Metrazol Therapy: Modifications of Technique H. H. Haines—p. 660.
Note on the Treatment of Aggression in Emotionally Disturbed Children. L. R. Wolberg—p. 667.
Positive Transference in Schizophrenia Case D. A. Barbura—p. 674.

Divergent Outcome of Schizophrenia in Identical Twins.—Arieti observed a pair of schizophrenic monozygotic twins. The symptoms presented by the patients were fundamentally similar, but whereas 1 of them made a spontaneous recovery, the condition of the other was practically unchanged after more than two years. The patient recovered who was the more athletic and less asthenic, whose prepsychotic personality was definitely more extroverted, who had always shown better ability to cope with the problems of life and whose symptoms were somewhat atypical because of the presence of many "psychoneurotic" symptoms.

Psychosomatic Aspects of Allergy.—Karnosh thinks that neurologists or psychiatrists cannot ignore the emotional, mental and neural phenomena which are interlocked with the allergic reaction in human tissues. That the brain is capable of a direct and profound reaction to protein hypersensitivity has been clearly demonstrated by many investigations made on laboratory animals. The contentions of many clinicians that such conditions as migraine, Ménière's disease, infantile convulsions, transient paralysis and psychosis are expressions of allergy within the cranial cavity are not entirely without rational support. The author is chiefly interested in the question of the influence of the mind on the allergic lesion and, conversely, the influence of the allergy on the mind of the patient. He cites a schizophrenic patient in whom there existed a close parallelism between skin allergy and mental disease. The skin is a powerful organ of emotional expression—perhaps next to the voice and the facial muscles, it is the best expression of human feeling that can be freely observed. There is the blush phenomenon in self-consciousness, the paroxysmal sweating in anxiety states and the shallow, lemon tint in melancholia. Itching, like pain, may appear at the site of psychic fixation. The same sym-

thetic nervous excitations in the skin, such as vasomotor irritability, increased sweating and pilomotor excitement, are expressions of the emotions as well as of allergy. The author shows that, the more one studies allergic patients who suffer from "nervousness" or take an "erratic slant" at themselves and their troubles, the more one recognizes that these nervous reactions are not greatly different from those which follow in the wake of any chronic, irksome, disabling and irritating affliction. Even though one cannot establish a causative relationship between allergy and nervous and mental disease, it can be said that almost always, to some degree, the two afflictions are concomitant in the same person. No allergic patient can be adequately evaluated without considering the personality structure in which the disease is implanted.

Rocky Mountain Medical Journal, Denver

41:793-872 (Nov.) 1944

- Present Day Trends in the Diagnosis and Treatment of Psychoneurosis H. R. Carter—p. 809.
*Combined Smith-Petersen Nail and Fibular Bone Graft in Treatment of Fractures of the Neck of the Femur L. N. Ossman and W. S. Brooke—p. 814.
Diagnosable Congenital Cardiac Defects H. J. Dodge—p. 819.
What Would the Wagner Bill Do for American Medicine? A. C. Callister—p. 825.

Smith-Petersen Nail and Fibular Bone-Graft in Fractures of Neck of Femur.—Ossman and Brooke state that early manipulative reduction followed by internal fixation with metal nails, screws or pins is now generally accepted as the best method of treating fractures of the neck of the femur. The results are so gratifying, as compared with the older methods of sand bags, weight traction or even the Whitman abduction casts, that there should seldom be an excuse for using the older methods. From a study of older and more recent literature the authors estimate that the mortality rate has been reduced from about 25 per cent with the older methods to about 10 per cent with the newer methods. The incidence of nonunion has been reduced from approximately 75 per cent to 25 per cent. When early reduction and fixation are not obtained, disaster may be avoided by combining the Smith-Petersen nail fixation with the additional insertion of a fibular bone-graft across the fracture paralleling the nail. This combined extra-articular osteosynthesis was first described and used with good results by King of Australia in 1939. The authors report the histories of 2 patients whom they treated in this manner. This treatment is useful in some cases of nonunion following fracture of the neck of the femur.

Surgery, Gynecology and Obstetrics, Chicago

79:561-678 (Dec.) 1944

- Experimental Structural Alterations in Brain During and After Concussion W. F. Windle, R. A. Grant and C. A. Fox—p. 561.
Injuries of Extremities in Amphibious Warfare J. P. Cole and H. B. Neel—p. 573.
Skin Grafting and Secondary Closure in War Wounds Preliminary Report C. S. Whelan and W. D. Thompson—p. 584.
*Effects of Orchiectomy on Primary and Metastatic Carcinoma of Breast N. Treves, J. C. Abels, H. Q. Woodard and J. H. Farrow—p. 589.
Choice of Incision in Gallbladder Surgery as Factor in Preventing Wound Disruption, Exsiccation and Herniation J. L. DeCourcy—p. 606.
*Papillary Cystadenoma Lymphomatosa (Warthin's Tumor) of Parotid Salivary Gland H. Martin and H. E. Ehrlich—p. 611.
Color Matching of Skin Grafts and Flaps with Permanent Pigment Injection Gertrude Hance, J. B. Brown, L. T. Byars and F. McDowell—p. 624.
Technic of Aseptic or Closed Gastric Resection Using Turniss Clamp L. C. Culligan—p. 629.
Combined Operation for Varicocele and Inguinal Hernia Preliminary Report C. T. Javert and R. L. Clark—p. 644.
Primary Masculinizing Tumors of Ovary. J. A. Burkett and I. Abell—p. 651.
Sacrocoelomic Sinus (Pilonidal Sinus) in Direct Continuity with Central Canal of Spinal Cord H. A. Shenkin, A. D. Hunt Jr and R. C. Horn Jr—p. 655.
Pathology of Experimental Clostridial Infections in Dogs B. V. Pavata, A. H. Dowdy, R. L. Sewell and J. G. Vincent—p. 660.
Primary Carcinoma of Extremity. H. M. Clarke—p. 669.

Orchiectomy in Carcinoma of Breast.—Treves and his associates say that the encouraging regressions of the skeletal metastases from mammary carcinoma following castration in women still menstruating suggested the possibility that orchiec-

tony might retard or even cause regression of mammary cancer in the male. The latter experiment was begun more than two years ago at the Memorial Hospital in New York. The consent for orchiectomy, even in the elderly man with advanced breast cancer, was most difficult to obtain. Even an elderly man with intense pain from osseous metastases was unwilling to undergo castration. It seems to be more difficult to obtain permission for castration in males suffering from mammary cancer than in malignant disease of the prostate. The authors present histories of 6 patients who underwent castration because of carcinoma of the breast. The first patient, a man aged 72, experienced a satisfactory and dramatic regression of a primary carcinoma of the male breast which had metastasized to bone. The breast cancer was replaced by a cicatrix, the metastatic nodes regressed. The secondary deposits, as demonstrated in repeated x-ray films, showed reparative change. The repair in the ribs, shoulder girdle and spine were striking. The second patient, aged 75, who had undergone mastectomy, at first refused an orchiectomy. Lesion of the scalp and skeletal pain induced him to submit to orchiectomy, but he died on the third post-operative day. His death was probably hastened by his poor physical condition, the result of associated disease, probably hepatic cirrhosis. The third patient, a man aged 65, obtained a very satisfactory result from orchiectomy. He has been relieved of his pain and has maintained his good physical condition. The phosphatase level has returned to normal, and the x-ray studies show evidence of bone regeneration. The fourth patient has remained free of local or distant disease following the local excision of a carcinoma of the left breast. The only adjuvant therapy was the orchiectomy, which at the time had not been planned as a therapeutic measure but for the relief of a bilateral hydrocele. The result is most satisfactory one year after treatment. In the fifth patient, who was only 39, castration in no way altered the clinical course. The failure to respond may have been due to the patient's comparatively early age. In the sixth patient there has been an arrest in the growth of the primary lesion with some regression in the tumor, healing in the skin and disappearance of the cutaneous metastases.

Papillary Cystadenoma Lymphomatosum of Parotid Salivary Gland.—Martin and Ehrlich undertook to determine the clinical behavior of papillary cystadenoma lymphomatosum of the parotid salivary gland. Their report is based on 22 cases culled from the records of 359 parotid tumors, all observed in the head and neck service of the Memorial Hospital, New York, from 1932 to 1944 inclusive. The authors apply the term "papillary cystadenoma lymphomatosum" to an essentially benign cystic tumor occurring either in the parotid salivary gland or attached to it. Its microscopic appearance is characterized by specific epithelial structures supported by a lymphoid stroma. Other terms that have been employed to designate this neoplasm are adenolymphoma, branchiogenic adenoma, epitheliolymphoid cyst, branchioma, cylindrocellular branchiogenic adenoma, orbital inclusion adenoma and onkocytoma. In 1910 Albrecht and Arzt first established this tumor as a distinct morphologic entity. There have since been reported 66 cases exclusive of the present series. In 1929 Warthin discussed the cases already in the literature and added 2 of his own. Since then the growth has often been referred to as Warthin's tumor, an eponym hardly justified from the standpoint of precedence. The ages of the patients whose cases are reviewed varied between 30 and 73 years. There were 20 men and 2 women. The women patients were rather young, 36 and 37 respectively. Cystadenoma lymphomatosum is an encapsulated tumor. The capsule is thin, strong and glistening and is traversed by fine blood vessels. The specimens varied from 1.5 to 5.5 cm. in greatest diameter and were ovoid and globular. The histogenesis of the tumor has not been definitely established. There is a reasonable anatomic basis to support the theory of its origin from heterotopic salivary gland rests situated in lymph nodes adjacent to or within the parotid gland. The neoplasm is a distinct morphologic entity, but it cannot be distinguished clinically from the relatively common mixed parotid tumor. Cystadenoma lymphomatosum recurs promptly if surgical excision is not complete. All tumors in this series were anatomically and clinically benign. There are no satisfactory data to indicate whether the tumors are radiosensitive or radiocurable.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London 25:111-134 (Aug.) 1944

- Erythrocytes in Cytoplasm and Nuclei of Liver Cells. A. Rosin and L. Doljanski.—p. 111.
Influence of Milk Factor on Incidence of Breast Cancer Induced by Esterone. L. Dmochowski and W. E. Gye.—p. 115.
Transmission of Mammary Tumor Inciting Factor by Splenic Grafting. L. Dmochowski.—p. 119.
Stability of Fibrinogen in Normal and Pathologic Plasma. E. Wertheimer, B. Shapiro and I. Fodor-Salomoniowicz.—p. 121.
Effects of Prolonged Administration of Small Doses of Alloxan on Islet Tissue of Rat Pancreas. H. Hughes and G. E. Hughes.—p. 126.
*Influenza Virus as Laboratory Contaminant. C. H. Andrews, R. E. Glover, F. Himmelweit and W. Smith.—p. 130.

Influenza Virus as Laboratory Contaminant.—Andrews and his associates have described the recovery during the recent influenza A outbreak of two virus strains which proved serologically identical with the stock laboratory strain PR8 and, like it, of very high mouse virulence. These features led the authors to suspect that the strains might be "laboratory contaminants." They have been led by these occurrences to collect other instances in which laboratory contamination is suspected. Fourteen incidents are described as occurring in ten different laboratories. The fourteen "incidents" described may have diverse explanations. Some of them may be explained by inadequate sterilization of instruments or glassware. Others may have been genuine isolations of a virus like W. S.; it is unlikely that that virus is unique. Its repeated appearance under the conditions described seems highly suggestive. The series as a whole convinces the authors that influenza virus can turn up as a laboratory contaminant under conditions not yet understood. The appearance of such a contaminant may lead to temporary confusion. The authors emphasize that workers on influenza should keep the possibility of contamination constantly in mind.

British Journal of Venereal Diseases, London 20:85-130 (Sept.) 1944

- *Hemorrhagic Encephalitis and Intensive Mapharsen Treatment. F. L. Lydon.—p. 87.
Sulfonamide Therapy of Gonorrhea in the Male. D. I. Williams, A. J. King and C. S. Nicol.—p. 97.
Joint Venereal Diseases Service for Three Rural or Urban Districts. A. N. P. Milner.—p. 108.
Procedure for Serologic Diagnosis of Syphilis Based on a Comparative Study of Five Modern Serologic Tests. F. M. Berger.—p. 118.

Hemorrhagic Encephalitis and Intensive Mapharsen Treatment.—According to Lydon at one center 5 out of 53 patients with early syphilis, who were treated by a short term intensive course of mapharsen, developed hemorrhagic encephalitis or, as he prefers to term it, arsenical encephalopathy. The intensive mapharsen treatment was administered only to patients with early syphilis who had been given the following tests: (1) a complete blood count, including differential leukocyte count and total number of platelets; (2) the van den Bergh test and icterus index; (3) urine analysis for abnormal constituents such as albumin, sugar and bile. Urinary examinations were carried out daily and the van den Bergh and icterus index tests were performed on alternate days. At the end of the course a complete blood count was again made. Five injections, of 0.03 Gm. of mapharsen in 5 cc. of doubly distilled sterile water were given intravenously daily at two hourly intervals for five days. The total dose of mapharsen given was 750 mm. Glucose in large quantities was administered daily and, in addition, each patient received 200 mm. per day of ascorbic acid. After 3 cases of arsenical encephalopathy had developed, modifications were introduced, which included administration of vitamin B₁; spinal puncture and examination of the spinal fluid on the fourth day; prolongation of the treatment to six days, and blood sugar estimations on the first and fourth days. The author describes the histories of the 5 patients who developed hemorrhagic encephalitis. The reason he prefers the term arsenical encephalopathy is that neither hemorrhage nor inflammation is necessarily a pathologic feature. He defines the con-

dition as an acute cerebral complication which occurs during arsenical therapy and is characterized clinically in its early stages by changes in the mental sphere which are of two distinct types, (a) lethargic and (b) apprehensive. The onset is accompanied by changes in the cerebrospinal fluid, namely increased protein, positive Pandy test without increase in cellular elements and no change in sugar or chloride contents. The early recognition of these mental changes is of importance both for cessation of the arsenical drug and for institution of treatment. A peculiar oral fetor, widely dilated but normally reacting pupils and obstinate constipation are often observed. At a later stage various signs make their appearance, such as emotional instability and perseveration. Convulsions may occur, usually within the first few days; they are of serious import and probably indicate hemorrhage into the brain substance. Alcoholism and vitamin B₁ deficiency seem to be predisposing factors. Vitamin B₁ is suggested as both a prophylactic and a therapeutic agent; calcium gluconate is also used as an adjunct. Venesection, repeated lumbar puncture, and puncture and epinephrine seem to be of value. On the basis of the author's own experience and from a perusal of the available literature on intensive mapharsen therapy encephalopathy appears to occur many times more often under this method than under the various long term schemes of antisyphilitic treatment. He thinks that it is necessary to carry out extensive research into the causation and treatment of encephalopathy before intensive mapharsen treatment can be applied generally.

British Medical Journal, London

2:521-550 (Oct. 21) 1944

*Plasma Volume in Traumatic Shock. A. C. Crooke, C. J. O. R. Morris and R. G. Bowler.—p. 521.

Eustachian Obstruction and Otic Barotrauma in Air Crews of Heavy Bombers. R. M. S. Matthews.—p. 523.

*Laboratory Test for Diagnosis of Smallpox. C. E. van Rooyen and R. S. Illingworth.—p. 526.

*Air Embolism as Complication of Vaginal Douching in Pregnancy. G. Forbes.—p. 529.

Active Convalescence of Hernial Repairs. D. J. Martin.—p. 531.

Plasma Volume in Traumatic Shock.—Crooke and his associates show that the estimation of plasma volume in patients with traumatic shock has been beset with difficulties; the estimation of Evans's blue in plasma is unreliable in nonfasting subjects and also in subjects who have received morphine or scopolamine. Repeated measurements of hemoglobin by the pyridine-hemochromogen method of Rimington and of the hematocrit revealed that the two values run parallel. The determination of hemoglobin is more accurate than that of the hematocrit. Total blood volume cannot therefore be determined, but it gives little more information than plasma volume when the hemoglobin value is also known. Reduction of plasma volume is accepted as being characteristic of traumatic shock, the amount of the fall being proportional to the severity of the shock. In general this has been confirmed in the present series of cases, but the reduction is greatest when examined early, as shown by the first 2 patients, both of whom died of their injuries. In case 1 the plasma volume had fallen from the normal level of between 4.5 and 5.5 per cent of body weight to about 2.1 per cent in less than two hours. This patient died two hours later. In case 2 plasma volume was about 3.3 per cent of body weight seven and one-half hours after the patient sustained a ruptured kidney and spleen. She died sixteen hours after the injury. In less severe cases the reduction of plasma volume may be slight, especially if not examined until some hours after the injury. Hemoglobin concentration falls following traumatic shock, but the fall is minimal immediately after the injury and may not become severe until several hours later. The reduction of plasma volume in all the cases which the authors examined could be explained by hemorrhage alone, but many workers have claimed that shock is a toxic condition associated with hemoconcentration. Hemoconcentration as judged by increased concentration of hemoglobin or a hematocrit value above the normal has not been observed in the cases in this series except when associated with burns or with the crush syndrome. Hemoconcentration in these cases is due to loss of serum into the damaged tissues without a corresponding loss of corpuscles.

The conception that hemoconcentration occurs in traumatic shock in man is probably due to the cyanosed, viscid character of the blood in severe cases. The authors have found, however, that in contrast to this increased viscosity of whole blood the viscosity of plasma is below normal. The increased viscosity of the blood with a decreased clotting time and a normal hemoglobin suggests a state of incipient clotting. The fibrinogen content of the plasma was, however, found to be normal by electrophoresis. The increased viscosity of the whole blood may therefore be due to an abnormal state of dispersion and of the alpha component, since it is known that both alpha and beta components readily form gels under certain abnormal conditions. This gel would be removed in the centrifugal separation of cells and plasma, and such plasma would have a decreased viscosity, a deficiency in alpha component and a normal fibrinogen content.

Laboratory Test for Diagnosis of Smallpox.—Observations on over 100 patients with smallpox studied in the Middle East has convinced van Rooyen and Illingworth that a diagnosis of variola on the first and second day of the rash is often extremely difficult and that the differentiation of mild smallpox from varicella may be impossible throughout the course. They were able to confirm Paschen's observations that the elementary bodies of variola are larger than those of varicella. They utilized this observation as the basis of a laboratory test for the identification of smallpox. Paschen uses Löffler's flagellar mordant and carbol fuchsin stain. The authors select 6 early lesions, preferably fresh vesicles containing clear fluid, and these are opened with forceps. If the lesion is a vesicle, the fluid is first absorbed with cotton. The base of the exposed cavity is then firmly scraped and the material obtained is rubbed with a rotary motion on the surface of a glass slide. Three such smears can be made on each slide. Best results are obtained by scraping the earliest papular and vesicular lesions; pustules should be avoided, as these often contain artefacts. The authors made skin scrapings in 80 cases of smallpox ranging in severity from mild to fatal hemorrhagic variola. These were subjected to the film test for elementary bodies. The laboratory and clinical findings corresponded in 77 cases. A negative result was returned in 3 cases of smallpox. Variola elementary bodies were demonstrated with ease in the papular and vesicular stages of the illness, but after the onset of pustulation they tended to disappear. In 32 cases of early smallpox the laboratory answer was positive on the first day of the rash, when it was very sparse and the clinical diagnosis was difficult or impossible to establish. In no instance did a positive laboratory verdict disagree with the final clinical diagnosis of the case. Control skin scrapings from 64 clinical cases of varicella occurring in Egypt, together with a further 16 cases of chickenpox contracted in England, have been studied under identical conditions and compared with similar material from 80 cases of variola in Egypt. The film test is not applicable to the diagnosis of chickenpox because the elementary bodies of varicella are too small, are too scanty and show feeble affinity for Paschen's stain.

Air Embolism as Complication of Vaginal Douching in Pregnancy.—Forbes reports the history of a woman aged 34 who had had three previous pregnancies and who complained of poor health on June 30, 1943 but attributed her symptoms to the onset of menstruation. She usually had dysmenorrhea severe enough to require two or three days in bed. She began to menstruate on July 1. Next day she collapsed on her way to bed and died a short time later. At the time of the necropsy there was nothing to suggest the cause of death. When the abdomen was opened a gravid uterus was found. Opening the uterus revealed the placenta low on the right lateral wall and its lower edge detached to a depth of 1 inch. The membranes were separated to a depth of 2½ inches. The uterus contained a fetus of three months' gestation. The lungs were very edematous. The pericardium appeared normal. The right side of the heart was dilated, and the auricle and ventricle were found to be filled with frothy blood. The pulmonary artery contained identical material. The possibility of air embolism was not thought of before the necropsy, and consequently the special technic usually followed in such cases was not adopted. However, the findings indicate conclusively that this was the cause of death. The obvious suspicion was that this case was one of criminal abor-

tion. Further inquiries revealed that the woman had not missed a menstrual period, and on June 3, 4 and 5 she was medically attended for dysmenorrhea. Neither her husband, her friends nor her doctor knew that she was pregnant. There is definite evidence also that during one of her previous pregnancies she continued to menstruate for three months after the pregnancy began. There seems, therefore, to be some doubt whether she realized that she was pregnant. She was accustomed to using a Higginson's enema syringe for vaginal douching and, though no definite evidence on this point was forthcoming, it seems likely that she douched immediately before retiring. The author points out that there are 3 cases on record in which vaginal insufflation during pregnancy had resulted in death from air embolism. So far as can be ascertained there is no previous report of an instance in which simple vaginal douching led to air embolism from detachment of the placenta.

Journal of Laryngology and Otology, London

59:81-116 (March) 1944

*Treatment of Chronic Suppurative Otitis Media by Local Application of Penicillin and Other Drugs. E. G. Collins and K. E. A. Hughes. —p. 81.

Use of Amnioplastin in Surgery of Ear. M. Sugar. —p. 96.

Autoanesthetic Apparatus Suitable for Ear, Nose and Throat Work. T. B. Jobson. —p. 101.

Penicillin and Other Drugs in Chronic Suppurative Otitis Media.—Collins and his associates carried out studies to determine whether the local application of penicillin would prove a satisfactory remedy for chronic suppurative otitis media. Twenty-three patients were admitted to the hospital for this investigation, but only 9 of these were treated with penicillin; the remainder were treated by other methods. In 4 of the 9 patients treated with penicillin a dry and sterile ear was obtained, while in 12 of the remaining 14 a similar result was achieved. The percentage of successful cases was influenced by the bacteriology of the aural discharge. The response divided the patients into two groups according to the sensitivity of the organisms to penicillin. The conclusion is drawn that the local use of penicillin will be limited in this disease owing to the types of organisms present and the difficulties of application. Boric acid in alcohol was employed locally in 16 of the cases and appeared to have a good bacteriologic and clinical effect in about half of those patients from whose aural discharge diphtheroid or "coliform" bacilli were cultured. The proteus bacillus was affected only if the discharge was slight, and the authors suggest that when the proteus is a saprophyte this solution will be effective but that when the proteus is a pathogen it will not prove successful. The staphylococcus and streptococcus did not appear to be influenced by this solution. Boric iodine powder was employed in 9 cases. The powder gave results similar to the boric acid in alcohol, though it appeared to be more effective against the "coliform" bacillus. Its action against the proteus was limited. Sulfanilamide powder, succinylsulfathiazole powder, sulfacetamide in solution and sulfathiazole in a cream suspension were tried locally. None of the sulfonamides used locally appeared to influence the proteus cases. Staphylococci were unaffected bacteriologically, though clinically there was less discharge and the general appearance improved. Sulfathiazole was given by mouth to 10 patients. In 4 patients with "coliform" organisms in their discharge, who had improved slowly with boric acid in alcohol, oral administration of sulfathiazole rendered the ears sterile and practically dry. The same favorable effects were obtained in 2 of 3 patients with proteus infection. Two of 3 patients with diphtheroid infection seemed benefited, but not the third. A short course with large doses of sulfathiazole will probably give better results than smaller doses over a long period and will be less dangerous. The authors gained the impression that of all the bacilli found in the aural discharge the staphylococcus and the proteus are the main enemies, and if these two organisms are in combination they appear to be very intractable to treatment. The bacteriology also suggests that the external route of infection may be more important than we imagine and that more attention should be given to the prevention of reinfection of a dry open perforation by dirty water from washing or the screwing of dirty towels into the ears.

Acta Paediatrica, Stockholm

30:153-275 (Dec. 23) 1942

Study of Ionized Calcium in Serum of Children. G. Herlitz. —p. 153.
*Optic Neuritis in Poliomyelitis: Clinical and Experimental Study. R. Bergman, K. O. Granström and J. H. Magnusson. —p. 176.
Changes in Skeleton Associated with Acute Leukosis in Children. O. Brandberg. —p. 205.

*Noncardiac Familial Cyanosis. T. Thysell. —p. 212.

Case of Cyclic Agranulocytosis. Olga Imerslund. —p. 232.

Case of Thrombopathy. H. Jellke. —p. 251.

Optic Neuritis in Poliomyelitis.—Bergman and his associates report the case of a girl aged 9 who presented the clinical picture of acute meningoencephalitis with respiratory paresis, paresis of the right arm and right leg, paresis of central type of the right facial nerve, paresis of the palate and slight stiffness of the neck. The patient was placed in the respirator for twenty-two hours, and all the signs of paresis disappeared. Double optic neuritis was observed one month later. A diagnosis of poliomyelitis was made because at the time of the patient's admission to the hospital a poliomyelitis epidemic was in progress, many cases of which presented the same clinical picture as in the case reported. The diagnosis was clarified by an experimental investigation: Intraperitoneal and cerebral injections of etherized stool suspensions (50 cc. and 0.5 cc. respectively) from a fecal specimen taken the day following the patient's admission to the hospital were given to a *Macacus rhesus* monkey. Twenty-seven days later the monkey was killed. While alive it did not present any symptoms of paralysis. Hyperemia of the axillary, inguinal and mesenteric lymph nodes was demonstrated at necropsy. Perivascular mononuclear meningitis was revealed on microscopic examination of the central nervous system. Massive perivascular cell infiltration characteristic of experimental poliomyelitis was found beneath the cortex of the brain, in the walls of the lateral ventricles and in the area adjacent to the aqueduct of Sylvius. There were no such changes in the gray substance of the spinal cord, but a mononuclear cellular focus was found in the white substance of the upper part of the dorsal spinal cord. A few typical neuronophages were observed in the ventral wall of the aqueduct. Three weeks later intraperitoneal and cerebral injections of an emulsion of the brain substance of the animal were given to a second *Macacus rhesus* monkey. The examination of this monkey was negative while the animal was alive, but hyperemia and enlargement of the inguinal and axillary lymph nodes was demonstrated likewise at necropsy. Occasional perivascular infiltrations were found in the walls of the lateral ventricles and the floor of the fourth ventricle. Perivascular meningitis of the thoracic spinal cord, characteristic of poliomyelitis, was revealed. On the basis of these findings the optic neuritis was considered to be caused by the same infection.

Noncardiac Familial Cyanosis.—In 1941 Thysell observed 4 cases of cyanosis at the Gothenburg Children's Hospital involving a father and his 3 children. The skin of the mother, a half-sister to the 3 children (the mother's child in a former marriage) and the remaining relations were of normal color. All 4 had been blue since birth. They had developed normally and had no subjective difficulties such as dyspnea, palpitations or fatigability. The cyanosis appeared somewhat increased on physical exertion. Neither cardiac insufficiency nor any other cardiac alteration could be demonstrated. Oxygenation of the venous blood was normal. There was no polycythemia. Spectroscopy of the blood gave normal results. Lundsgaard's contention is that the cause of cyanosis is to be sought in the reduced hemoglobin content of the capillary blood. Recent capillary microscopic studies of severe cases of cyanosis demonstrated that the color of the skin depends fundamentally on the degree of fullness of the end capillaries. Capillary microscopic examination of the vessels in the end phalanges of the fingers of the author's 4 patients showed highly abnormal vascular structure with formation of nodules and of aneurysm, spiral contortions and formation of bridges in a dilated and blood distended subcapillary capillary network. The author wonders whether this familial cyanosis can be due to an independent, stationary disorder, not hitherto described in the literature, of the subcapillary plexus (the substratum of the cyanosis) or in a congenital malformation of it. Necropsy might reveal a congenital defect complementing the capillary disorder.

Book Notices

An Introduction to Public Health. By Harry S. Mustard, B.S., M.D., LL.D., Director, and Professor of Public Health Practice, Delamar Institute of Public Health, College of Physicians and Surgeons, Columbia University, New York. Second edition. Cloth. Price, \$3.25. Pp. 283. New York: Macmillan Company, 1944.

The author, an experienced public health administrator, has condensed into a brief space a complete summary of public health procedures. He begins with a discussion of backgrounds and associations of hygiene and public health, including a swift historical review. He then discusses vital statistics and the importance of record keeping in public health procedure. This is followed by an explanation of the organization and administration of public health units of various kinds, including suggestions as to appropriate salaries for various positions. Brief mention is made of the voluntary health association. Next follows a chapter on the handling of the acute communicable diseases. Tuberculosis is given extensive consideration in a separate chapter, as are the venereal diseases. Then follows material on sanitation and, in the order named, industrial hygiene, individual hygiene, child bearing and public health, infancy and childhood, school health service, "certain noncommunicable diseases," namely cancer, heart disease, mental diseases and diabetes, and a closing chapter on medical care.

The book is clear, concise and packed with information. It should be serviceable as a desk manual for health officers and their administrative personnel, in the teaching of public health, and for the school administrator. Practicing physicians who will be brought increasingly in contact with public health procedures will find this book excellent to give them an understanding of the administrative point of view in public health.

The chapter on medical care is reminiscent of the Shakespearean curse "on both your houses." The author begins with a summary of the situation, for which he relies largely on the publications of the Committee on the Costs of Medical Care and the National Health Survey by the U. S. Public Health Service and other government sources; to these statistics many physicians have taken serious exception. Coming to the question of the private practice system of medical care, he pays tribute to it as a system of practice which "safeguards individual liberty, permits competition, free enterprise and freedom of choice in their most desirable forms. . . . There can be no doubt that for certain elements of the population in the United States this system has produced as fine medical care as anywhere in the world. Those who have benefited most by it are the fairly well to do and the rather completely poor. . . . It is those in the middle and the lower income brackets who have failed to benefit from this system of private medical practice." Those who would change the system are described somewhat caustically: "On the one extreme there is thrown into the argument the fervor of the reformer who burns with a zeal for betterment of those he considers underprivileged. . . . He is the kind of person who bleeds vicariously for humanity and hurls terms like bourgeois, tory and fascist at all who oppose him. . . . Not infrequently this type of person is a quite objectionable fellow." The author, however, is no kinder to the defenders of the present system of medical care: "On the other extreme . . . is the typical well fed, rather sleekly tailored specialist who by the tradition of his profession is more or less honor bound to defend the private practice of medicine as it is. He never sees the economically distressed except in an orderly hospital ward or in the white cleanliness of the operating room; and so far as he is concerned medical care of a high order is freely and amply available to all." There is more to both descriptions, but these excerpts will suffice. The author adds that "in all fairness it should be noted that each is sincere in his attitude. Fortunately, they are not indices of the public on the one hand or of physicians on the other; . . . they are the most vocal and to that extent appear as representative of their respective groups." The author's own attitude seems to be summed up in the statement "It is apparent that some sort of public medical service will, in the future, be developed. A contribution would be made if more level headed persons, representing physicians on the one hand and the public on the other, made themselves heard, to the exclusion of bitter and emotional voices."

Handbook of Chemistry: A Reference Volume for All Requiring Ready Access to Chemical and Physical Data Used in Laboratory Work and Manufacturing. Compiled and Edited by Norbert Adolph Lange, Ph.D., Assisted by Gordon M. Forker, B.S. With an Appendix of Mathematical Tables and Formulas compiled by Richard Stevens Burlington, Ph.D., Associate Professor of Mathematics at Case School of Applied Science, Cleveland, Ohio. Fifth edition. Cloth. Price, \$6. Pp. 1777; 271. Sandusky, Ohio: Handbook Publishers, Inc., 1944.

This is a handbook, as the title indicates, prepared with the assistance of various collaborators. The editor many years ago earned the confidence and respect of his profession and of those who require ready access to the chemical and physical data used in laboratory work and manufacturing. Several tables which appear in this edition for the first time have necessitated an increase in the number of pages. They are Periodic Table (Deming); Flammable Liquids; Flame Temperatures; Plastics; Fluorescence of Chemicals, Minerals and Gems; and Water for Industrial Use. Their contents will be welcomed by those engaged in that particular field. Many of the tables occurring in previous editions have been completely revised and brought up to date, thereby increasing the size of the volume. Previous books have proved to be of value not only to the chemists and chemical engineers working in manufacturing plants but to those employed in clinical and pharmaceutical laboratories as well. It is believed that this edition, with so many revisions of the various subjects and the additions of new data, will prove to be of greater value as a reference volume. The present volume is well compiled and printed on good paper. It is worthy of recommendation and should be on every scientific worker's desk or at least handy for consultation.

Practical Neurological Diagnosis with Special Reference to the Problems of Neurosurgery. By R. Glen Spurling, M.D., Clinical Professor of Surgery (Neurosurgery), University of Louisville School of Medicine, Louisville, Ky. (On Leave of Absence). Third edition. Cloth. Price, \$4. Pp. 237, with 100 illustrations. Springfield, Illinois, & Baltimore: Charles C Thomas, 1944.

In this edition of the compend on neurologic diagnosis there are three parts: The first discusses and describes the neurologic examination; this is done acceptably. The second part takes up the spinal fluid and is clearly and ably written. The third part discusses roentgen diagnosis in neurologic diseases. It includes plain films and ventriculographic studies of the skull as well as plain films of the spinal column. There are remarks about lipiodol, thorotrast and air visualization of the spinal subarachnoid space. The book is up to date and is highly recommended to medical students, general practitioners and men in the armed forces.

Endocrine Man: A Study in the Surgery of Sex. By L. R. Broser, O.B.E., D.M., M.Ch., Surgeon, Charing Cross Hospital, London. With a foreword by Sir Peter Chalmers Mitchell, O.B.E., D.Sc., F.R.S. Cloth. Price, 12s. 6d. Pp. 144. New York: Grune & Stratton Inc.; London: William Heinemann, Ltd., 1944.

This scholarly and well written book is divided into eleven chapters devoted to cell evolution in relation to instinct, heredity, evolution of species, physiology of the autonomic nervous system, the diencephalon, the functional evolution of the endocrine system, the endocrine system, the adrenogenital syndrome, symbiosis and parasitism, and the nature of man. The discussion of the adrenogenital system holds great interest for the clinician. It recounts in an interesting way the good teamwork done by Broser and his co-workers in the study of this problem. Aside from this chapter the book has no great interest for the man in private practice.

A Bibliography of Aviation Medicine Supplement. By Phebe Margaret Hoff, Ebbe Curtis Hoff, and John Farquhar Fulton. Publication No. 9, Historical Library, Yale Medical Library. Published by the Committee on Aviation Medicine, Division of Medical Sciences, National Research Council, Acting for the Committee on Medical Research, Office of Scientific Research and Development, Washington, D. C. Cloth. Price, \$2.50. Pp. 109. Springfield, Ill.: Charles C Thomas, 1944.

A Bibliography of Aviation Medicine appeared two years ago. This supplement has become necessary because of the phenomenal growth of medical literature on aviation medicine. A new subheading has been added on rehabilitation; otherwise the classification, arrangement and style follow the conventions observed in the original bibliography, with some minor changes and rather less subdivision. There are fewer historical items, and the section on special psychology has not been subdivided. This is a most useful addition to the bibliography in the field.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

VALUE OF ELECTROENCEPHALOGRAM IN EPILEPSY

To the Editor:—What is the value of an electroencephalogram in the diagnosis of epilepsy? With respect to grand mal, what percentage of patients show diagnostic recordings between attacks? When attacks are rare and diagnosis is in doubt, what is the actual value of a "normal" encephalogram?

M.D., New York.

ANSWER:—More than most laboratory procedures, the value of the electroencephalogram rests on dependable apparatus and on experienced interpretation of the tracings obtained. Under these conditions the electroencephalogram in most cases of epilepsy gives more pertinent information than all other laboratory procedures combined. The technic is most useful in confirming a diagnosis of epilepsy made on clinical grounds and in judging the type and severity of the accompanying cerebral dysrhythmia. Records made during a seizure are practically always abnormal and distinctive for the type of seizure which the patient is experiencing—grand mal, petit mal or psychomotor. Of tracings made between seizures, only one form can be considered diagnostic: the three per second alternate dart and smooth dome of petit mal (pyknolepsy). In a resting period bursts of high voltage fast waves such as are uniformly encountered during a grand mal seizure are found in only 1 per cent of patients with a history of grand mal only. Discharges of high voltage slow waves occur in 42 per cent of patients having a history of psychomotor seizures only, and the alternate dart and dome formation in 85 per cent of those having petit mal only. In the latter group, however, because of the frequency of petit mal, many of these records are made during a seizure. Approximately 15 per cent of patients with a clinical diagnosis of epilepsy have a normal electroencephalogram during a fifteen minute recording. This proportion is higher in patients whose seizures are rare. The presence of a normal electroencephalogram does not exclude a diagnosis of epilepsy any more than a single normal electrocardiogram excludes a diagnosis of heart disease or of paroxysmal disturbances such as extrasystoles or paroxysmal tachycardia.

Reference:

Gibbs, F. A.; Gibbs, E. L., and Lennax, W. G.: Electroencephalographic classification of epileptic patients and control subject, *Arch. Neurol. & Psychiat.* 50: 111 (Aug.) 1943.

NERVE TRAUMATIZATION IN TREATMENT OF POLIOMYELITIS

To the Editor:—A recent article in *Time* referred to the treatment of poliomyelitis by crushing the nerve above the point of muscular wasting. This form of treatment has been suggested by Lieut. Comdr. Harvey Ellsworth Billig Jr. (MC) and a physiologist, Antonie Van Harreveld of the California Institute of Technology. According to the report, this procedure of nerve crushing can now be done bloodlessly with an air driven rivet gun, and the *Time* article said that it has been performed on 500 patients in Los Angeles and 40 in Philadelphia with remarkably good results. A friend of mine who has a paralyzed son has asked me to find out the value of this treatment. The boy in question has been paralyzed in the right leg for a number of years.

Thomas M. Adams, M.D., Montezuma, Ga.

ANSWER:—The benefits to be derived from the operation described by Lieutenant Commander Billig, consisting in crushing a nerve above the point of muscular wasting in patients who have suffered from infantile paralysis, are not yet sufficiently proved for the procedure to be accepted by men who have had the greatest experience with the problem of paralysis following anterior poliomyelitis. The recently suggested procedure of traumatizing the nerve with an air driven rivet gun will require much more controlled study before it can be recommended. Trauma of any kind will produce varying degrees of hyperemia. Hyperemia is a reaction of repair. Such a reaction may be of some benefit in stimulating recovery of tissues which have been injured. No procedure carried out on peripheral nerves or other peripheral tissues can be of any value in regenerating or restoring destroyed anterior horn cells. The major pathologic change in paralysis from poliomyelitis consists in the damage to these anterior horn cells. For that reason, in the most cases at least, the approach to the problem is from the wrong direction when treatment is given to peripheral nerves. This treatment would be of doubtful value to the boy with paralysis in the right leg which had been present for a number of years.

ENDEMIC GASTROINTESTINAL INFECTION

To the Editor:—For three years, especially the past summer, I have had patients of all ages over a year report severe epigastric pain high in the abdomen, generally central although it may be to right or left or both sides. The pain may be accompanied by nausea and vomiting, diarrhea or loss of appetite. Distress follows food, cold drinks and laxatives; stooping and activity make it worse. Relief is obtained from intravenous feeding, rest and heat. The temperature is normal, the pulse rate 60 to 80 unless there is vomiting, and the white blood cell count is generally low (3,400 to 6,600). The urine is normal. There is no tenderness of the gallbladder nor pain in the back, as in pancreatitis. One child who had fecaliths in the appendix showed enlarged mesenteric glands. This condition may last four to six weeks and incapacitate the patient; there is a severe depression following the illness.

C. C. Hall, M.D., Moynard, Iowa.

ANSWER:—The symptoms and findings presented are not sufficient to permit an accurate diagnosis without further investigative procedures. The recurrence of similar symptoms for three summers and their occurrence in patients of all ages indicate an endemic infection of some sort. The common conditions to be considered are several: The symptoms are suggestive of an infection due to one of the *Salmonella* group of organisms. Culture of the patients' stools should be made; in the usual types of bacillary dysentery the diarrhea is more prominent and the leukocyte count higher than in the description given. The chronicity of the symptoms, low leukocyte count and pronounced depression are seen in undulant fever: the organisms may be found on culture; agglutination tests usually become positive after the first week of the disease. Mesenteric lymphadenitis suggested by the observation of enlarged glands in the 1 case is not an entity but the manifestation of an intestinal infection. Careful bacteriologic study of the cases described is indicated.

TREATMENT OF PERIAPICAL INFECTIONS

To the Editor:—What is the consensus regarding treatment of apical abscess of teeth with sulfonamides, penicillin or other drugs versus extraction? In this particular case, the abscess is well determined by x-ray, seems to be $\frac{3}{8}$ inch in diameter, is well capsulated and is draining externally through a fistula of the gum. This condition has been present for approximately a year and seems to cause no discomfort except an occasional headache. The patient is willing to undergo treatment by drugs over an extended period if there is a fair chance of recovery.

Walter E. Kramer, M.D., Chillicothe, Ohio.

ANSWER:—Periapical infections arise as a result of dental infections within the root canal, and therefore the removal of the original source of infection is indicated. This may be done by proper root canal therapy or the extraction of the tooth. If root canal therapy fails, the tooth must be extracted. Chemotherapy may hold in check the tendency for serious bacteremia, but there is no evidence to indicate that such therapy is able to remove foci of infection.

A chronic infection as described is not painful, particularly when there is drainage through a sinus in the gum tissue. Studies have been reported on the direct application of the sulfonamides to infections in the teeth and periapical tissues. The consensus is that they are not as effective as the treatment dentists usually employ for these conditions. The use of penicillin is under study, but reports are too meager to permit conclusions. One thing is certain—chemotherapy will not cause spontaneous resolution of the abscess. If the latter is allowed to remain, it may extend to infect adjacent structures or even result in a local osteomyelitis.

MIGRAINE OR EPILEPSY

To the Editor:—A patient now past 60 at the age of 40 started having attacks without premonitory aura, during which his pupils dilated, partial blindness occurred and, according to his daughter, his eyes got "glossy." He has had no convulsions. Since the first attack he has had many others of varying degrees of severity. With the mild cases he has only impairment of vision, but with the severe ones he is disoriented; the attacks last from fifteen to forty minutes. Sometimes there will be intervals of freedom for several months, while at other times he will have two attacks in a half day. Headache invariably follows, sometimes attended with nausea; and a few times he has vomited and the headaches have lasted twenty-four to thirty-six hours. Is this petit mal, or is it migraine, or is it a combination of the two?

M.D., Texas.

ANSWER:—It is not petit mal (pyknolepsy); the retention of consciousness is against the diagnosis of any type of epilepsy. The evidence submitted favors migraine. This diagnosis is more likely if the partial blindness consists of scotoma or hemianopsia, if the headache which invariably follows is one sided, if there is a family history of migraine, if attacks are relieved by subcutaneous injection of ergotamine tartrate and if the electroencephalogram is normal. The age of onset is rather late for migraine, and disturbances in mental processes to the extent of disorientation are unusual. Possibly the usual physiologic cerebral vascular phenomena of migraine are complicated by pathologic vascular changes.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 127, No. 7

CHICAGO, ILLINOIS
COPYRIGHT, 1945, BY AMERICAN MEDICAL ASSOCIATION

FEBRUARY 17, 1945

PENICILLIN THERAPY IN HEMOLYTIC STREPTOCOCCIC PHARYNGITIS AND TONSILLITIS

MAJOR NORMAN PLUMMER

MEDICAL CORPS, ARMY OF THE UNITED STATES
FORT BRAGG, NORTH CAROLINA

DOROTHY RHOADES DUERSCHNER, A.B.

MAJOR HAROLD DRAPER WARREN

CAPTAIN FRANCIS T. ROGLIANO

AND

CAPTAIN RUELL A. SLOAN

MEDICAL CORPS, ARMY OF THE UNITED STATES

Despite the advances in chemotherapy, the development of an effective treatment of such a relatively common disease as hemolytic streptococcic pharyngitis-tonsillitis remains an important medical problem. Although the clinical value of the sulfonamides first was demonstrated against the hemolytic streptococcus,¹ subsequent clinical observations have shown that this organism is relatively sulfonamide resistant when compared with the meningococcus, gonococcus and pneumococcus. Furthermore, some observers believe that the clinical courses of uncomplicated streptococcic pharyngitis-tonsillitis and scarlet fever are not alleviated or shortened by sulfonamide therapy,² although it is generally accepted that complications occur less frequently in these diseases when the sulfonamides are used³ and the value of the sulfonamides in the treatment of hemolytic streptococcic otitis media, mastoiditis, meningitis and pneumonia is unquestioned. Since the introduction of penicillin, the superiority of this new drug over the sulfonamides in the serious hemolytic streptococcic infections has been demonstrated⁴ but its value in acute pharyngitis-tonsillitis has not been ascertained.

Support and assistance were given by Col. Charles M. Watson, surgeon, Second Service Command; Col. A. W. Greenwell, surgeon, Fort Jay Regional Hospital, and Lieut. Col. Herman L. Blumgart, medical consultant, Second Service Command.

The laboratory investigations were carried out in the Department of Public Health and Preventive Medicine, Cornell University Medical College, under the Commission on Influenza, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, Preventive Medicine Service, Office of the Surgeon General, United States Army.

1. Colebrook, L., and Kenny, M.: Treatment of Human Puerperal Infections, and of Experimental Infections in Mice with Protoprisol, *Lancet* 1: 1279 (June 6) 1936.

2. Rhoads, P. S., and Afremow, M. L.: Sulfanilamide in Treatment of Sore Throat Due to Hemolytic Streptococci, *J. A. M. A.* 114: 942 (March 16) 1940. Fox, M. J., and Fordon, N. F.: Treatment of Scarlet Fever, *Arch. Int. Med.* 74: 1 (July) 1944.

3. Bowers, W. C.: Infections of the Middle Ear and Nasal Sinuses, *Preventive Medicine in Modern Practice* (edited under the auspices of the Committee on Public Relations, New York Academy of Medicine), New York, Paul B. Hoeber, Inc., 1942, p. 525. Fox and Fordon.²

4. Committee on Chemotherapeutic and Other Agents, National Research Council: Penicillin in the Treatment of Infections: A Report of 500 Cases, *J. A. M. A.* 122: 1217 (Aug. 28) 1943. Herrell, Wallace E.: The Clinical Use of Penicillin, an Antibacterial Agent of Biologic Origin, *ibid.* 124: 622 (March 4) 1944.

Acute follicular pharyngitis, which is associated with acute follicular tonsillitis whenever the tonsils are present, is an accepted clinical entity and occurs frequently both sporadically and in epidemics, more commonly in children and young adults. Bacteriologic studies have shown it to be caused usually by the hemolytic streptococcus.⁵ The clinical diagnosis is made by the abrupt onset of fever and sore throat, and particularly by the appearance of the throat, the mucous membrane of which is red and edematous, with large follicles and irregular patches of exudate. The tonsils when present are enlarged, red, follicular and studded with irregular patches of exudate. The regional cervical lymph nodes are usually enlarged and tender. While the acute course may be short (usually two to five days), convalescence often is protracted, frequently requiring two to three weeks. The complications of hemolytic streptococcic pharyngitis are insidious in their inception, relatively frequent and often serious.

During the winter and spring of 1943-1944, bacteriologic studies⁶ in cases of respiratory disease in army and civilian hospitals in New York City and vicinity showed a 35.4 per cent incidence of cultures positive for the hemolytic streptococcus as compared with 5.8 per cent for the previous year. Also there was an increasing incidence of acute follicular pharyngitis and tonsillitis and, secondary to these conditions, many cases of peritonsillar abscess and a number of instances of hemolytic streptococcic pneumonia and empyema. Furthermore, several fatalities occurred in the locality, presumably due to a fulminating hemolytic streptococcic invasion. Because of the increasing seriousness of the problem, with an aim to decrease the number of complications and at the same time to shorten and alleviate the acute symptoms of a very painful disease, a trial of penicillin therapy was instituted.

The study was made at the Fort Jay Regional Hospital, which has an active acute respiratory disease service, and was commenced April 4, 1944. Only the severer cases were included, the criteria of selection requiring a temperature of 102 F. or above, a characteristic local lesion of redness, edema, follicular swelling and patches of exudate, a condition always accompanied by severe angina and moderate to severe systemic reaction. In addition, no patient acutely ill for more than thirty-six hours was included. On all patients, before the institution of any therapy, a complete blood count, urinalysis and a nasopharyngeal culture were made and blood was obtained for serologic study. The nasopharyngeal culture was repeated every day or every other day throughout the illness. Blood sulfonamide

5. Dawson, M. H.: Acute Tonsillitis, in Cecil's Textbook of Medicine, ed. 6, Philadelphia, W. B. Saunders Company, 1943.

6. These studies were made in connection with investigations on influenza being carried out by the Influenza Commission of the Board for the Investigation of Epidemic Diseases, United States Army.

determinations were made on all patients treated with sulfadiazine. These patients, in a rough way, were treated alternately with penicillin and either no specific therapy or sulfadiazine, 4.0 Gm. initially and 1.0 Gm. every four hours for an average total dosage of 25 Gm. The purpose of the alternation was to have a means of direct comparison, because at the onset it was appreciated that the series would be too small for a significant statistical analysis.

CULTURE TECHNIC

The bacteriologic method used was one with which we have had long experience and one previously described.⁷

A small cotton swab on a curved malleable aluminum wire is passed over the base of the tongue into the posterior nasopharynx. The swab is put immediately into a tube of 2 cc. of hormone blood broth, and the broth is quickly frozen by placing the tube in a vacuum jug containing solidified carbon dioxide. The specimens are ordinarily studied within a few hours of the time taken, but carefully controlled observations have shown no appreciable change in the cultures after having been frozen for as long as one month. When studied, the specimen is thawed promptly and under uniform conditions by being inserted in a water bath at 37 C. After the tube has been thoroughly shaken a measured amount of the inoculated broth is spread by an L shaped glass rod on blood hormone agar plates. After incubation for four hours, 0.5 cc. of the blood broth is injected intraperitoneally into white mice for a further check on the presence of the pneumococcus and other organisms considered significant. The blood agar plates are incubated and studied at twenty-four and forty-eight hours for the presence and distribution of organisms. The hemolytic streptococcus in addition to its appearance on the original blood agar plate is identified by gram stain, by subcultures in blood broth and on blood agar pour plates and finally by Lancefield grouping. The pneumococcus is identified in addition to cultural methods by the Neufeld typing. Hemophilus influenzae and the staphylococcus are recognized by their cultural and staining characteristics. Any other organism isolated through the mouse or present in large numbers on the original plate is identified whenever possible.

In the present study we have been particularly interested in the presence and number of hemolytic streptococci. In each specimen the total bacterial growth was graded as to whether it was 4 plus (largely confluent), 3 plus (innumerable, but mostly discrete colonies), 2 plus (50 to 300 colonies) or 1 plus (less than 50 colonies), and the proportion of hemolytic streptococci to the total bacterial growth was graded on a roughly numerical percentage basis.

CLINICAL CASES

Before analyzing the cases for the specific effects of therapy, a brief description of the clinical aspects of the group of cases as a whole seems important. Between April 4, 1944 and July 13, 1944 54 new cases were accepted for study. All the subjects were young men, hospitalized in the Fort Jay Regional Hospital. The smaller proportion of the group was made up of men posted at Fort Jay, the larger proportion of men stationed or residing in lower Manhattan and sent to the hospital by the Army General Dispensary. All of the subjects had temperatures of 102 F. or over and pronounced local involvement, as already mentioned, but had no evidence of complications.

Forty-four of the 54 patients had not had their tonsils removed and consequently also had acute tonsillitis. The 10 patients without tonsils had no complications

and the acute phase was comparatively short and mild, while among the 44 cases of acute pharyngitis and tonsillitis there were 4 of peritonsillar abscess, 5 of scarlet fever, 1 of pneumonia and 1 of scarlet fever complicated by acute sinusitis and pneumonia, and 1 in which subsequently a first attack of rheumatic fever occurred.

An unexpected feature of the hemolytic streptococcal infections was the slight increase or absence of increase in total white blood cell count. This occurred in most of the severer infections and even in cases of pneumonia and empyema and, in view of other reports, is difficult to explain.

BACTERIOLOGIC FINDINGS

In spite of the rigid clinical criteria used in the selection of cases, some occurred in which the cultures were negative for hemolytic streptococci. However, 45 (83.3 per cent) of the 54 cases showed group A streptococci, and of these 30 showed an almost pure culture. 9 showed definitely positive results (10 to 50 per cent of the colonies) and 6 showed only a few organisms. The 9 negative cases presented other organisms which may or may not have been significant. In 3, Hemophilus influenzae was the predominant organism, and in 4 the pneumococcus was isolated. In each instance the type was different, being 3, 4, 6 and 17 respectively.

Thirty-nine strains of hemolytic streptococci isolated from the same number of different individuals were typed by the Swift-Wilson-Lancefield precipitin method.⁸

Twelve, or 31 per cent, of the thirty-nine strains were type 19, 8, or 21 per cent, were type 36, 4 were type 3, and there were 2 each of types 1, 5 and 26 and 1 each of types 4, 8, 14, 17 and 30. Only 4 strains could not be typed with the anti-M serums available. It is interesting that in the group showing hemolytic streptococci there were 4 cases of scarlet fever, and each of these showed type 3 hemolytic streptococci.

CONTROL CASES

For comparison with the penicillin treated patients we observed and studied 17 patients not treated with penicillin, 11 of whom had sulfadiazine and 6 of whom had no specific therapy. These cases were designated as controls by a rough method of alternation carried out during the early part of the study in order to eliminate the pitfalls of clinical selection of cases.

Fifteen of the 17 "controls" had tonsillitis as well as pharyngitis. There were no cases of scarlet fever. There were 2 cases of peritonsillar abscess, 1 after six and one-half days of sulfadiazine and the other in the "no specific therapy" group. Other than the peritonsillar abscesses there was no instance of clinical relapse. In the 15 uncomplicated cases the febrile period lasted from two to six days; however, the average period was three days. No differences were detected between the clinical courses of the strict controls and those of the sulfadiazine treated cases. However, a much larger series would be necessary to obtain information on the differences in the incidence of complications.

Bacteriologically, the cases were studied by frequent nasopharyngeal cultures made over periods lasting from seven to eighteen days. In 5 of the 6 cases in which no specific therapy was given, the initial culture showed many hemolytic streptococci, and this persisted throughout the acute illness. In 1 case the culture was negative on the eleventh day, and in 3 others it was still positive on the thirteenth, fifteenth and eighteenth days respec-

7. Burky, E. L., and Smillie, W. G.: Nasopharyngeal Flora in Health and During Respiratory Disease in Isolated Communities in Alabama and Labrador, *J. Exper. Med.* 50: 643 (Nov.) 1929.

8. The typing was done through the kindness of Dr. Colin M. MacLeod, director of the Pneumonia Commission, Board for the Investigation and Control of Influenza and Other Epidemic Diseases of the Army.

tively. In 1 instance, with only a few hemolytic streptococci in the initial specimen, it was negative on the second day, slightly positive on the fifth day, negative on the seventh day and slightly positive on the ninth day. The sulfadiazine treated cases showed a pattern which we have already described.⁹ During the course of therapy the hemolytic streptococci (as well as the total organisms) in the nasopharynx are reduced in number, but only in 1 of the 8 cases of this series showing many hemolytic streptococci in the initial culture did these organisms disappear, and in all cases they returned with the discontinuation of sulfadiazine. Only 2 of the entire group of seventeen patients had negative cultures in the twenty-four hour specimen. Both of these showed a few colonies on the control plate and in broth, the following culture becoming positive. The final culture (made in seven to eighteen days from the onset) was positive in all but 3 of the cases, and these showed few hemolytic streptococci in the beginning. Examples of the clinical course and bacteriologic findings following no specific therapy and following sulfadiazine are shown in charts 1 and 2.

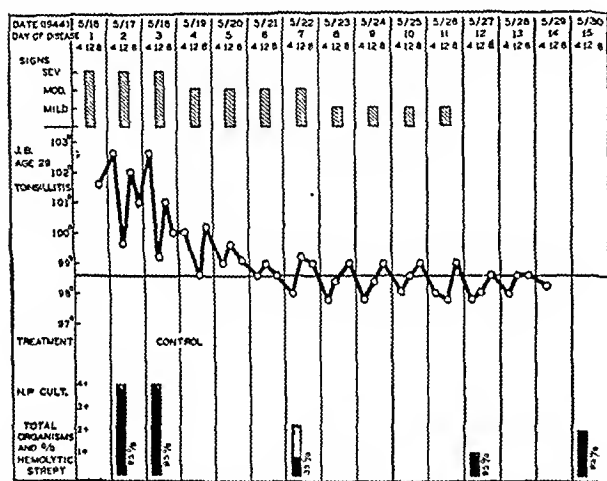


Chart 1 (control case).—Clinical course and results of nasopharyngeal culture in uncomplicated pharyngitis-tonsillitis treated symptomatically, but without specific therapy.

EFFECTS OF PENICILLIN

For our first trial of penicillin it was decided to use a dosage of 15,000 units intramuscularly every four hours, continuing the therapy for approximately three days, a period roughly corresponding to that during which sulfadiazine ordinarily was given.

After treatment of a very few cases it became evident that there was a striking immediate clinical response to penicillin. In eight to twelve hours after the first injection improvement in the patient's condition usually was noticed. In twenty-four hours, as a rule, the patient was free from symptoms and usually had a normal temperature. The rapid retrogression in the pharyngeal involvement was the most amazing feature of the study. Usually by thirty-six hours the exudate, swelling and redness had entirely disappeared and the pharynx appeared normal. The bacteriologic change also was impressive. In twenty-four hours either very few or no hemolytic streptococci were cultured from the nasopharynx, and in forty-eight hours a negative culture was the rule.

⁹ Cecil, R. S.; Plummer, N., and Smillie, W. G.: Sulfadiazine in the Treatment of the Common Cold, *J. A. M. A.* 124:8 (Jan. 1) 1944.

These results were impressive, but we soon discovered that this was not the entire story. Of 9 patients who received penicillin for the three to four day period 4 showed both a bacteriologic and a clinical relapse which was almost as spectacular as the initial response. In these cases, twenty-four hours after peni-

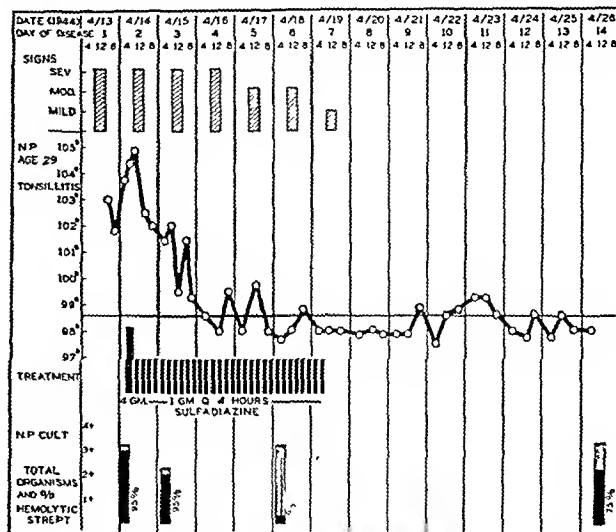


Chart 2.—Sulfadiazine therapy. Clinical course and results of nasopharyngeal culture in uncomplicated pharyngitis-tonsillitis treated with full dosage of sulfadiazine. The hemolytic streptococci in the nasopharynx were suppressed but not eliminated.

cillin was stopped, a few hemolytic streptococci were found in the nasopharynx. Forty-eight hours later they were present in large numbers and concomitantly a return of the pharyngeal swelling, redness and exudate occurred. In 2 instances the recurrent signs and symptoms were as pronounced as at the onset. Charts 3

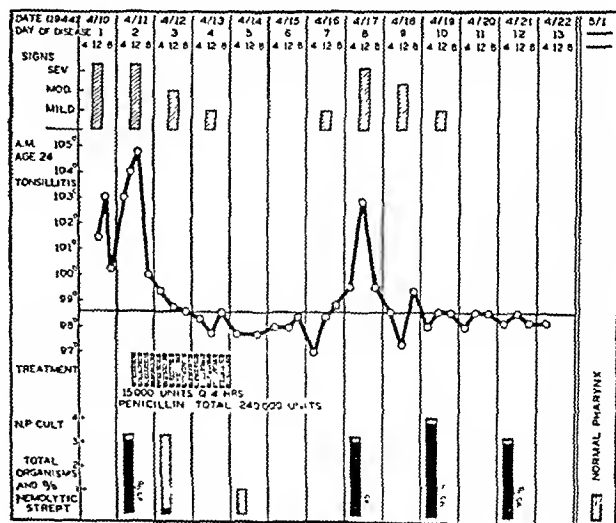


Chart 3.—Penicillin therapy for sixty-four hours: Clinical course and bacteriologic findings in pharyngitis-tonsillitis treated with penicillin for sixty-four hours. In the twenty-four hour culture hemolytic streptococci were not found on the blood agar plate but were isolated by mouse inoculation. The three day culture was entirely negative. Forty-eight hours after discontinuing penicillin there was a recurrence of signs followed by fever and a reappearance of hemolytic streptococci in large numbers in the cultures.

and 4 show the clinical courses and bacteriologic results in 2 of the patients having relapses following the discontinuation of penicillin, 1 having been treated for sixty-four hours and the other for ninety-two hours.

Five of the 9 patients receiving the three to four day penicillin therapy had no clinical recurrence, and it is interesting that in none of these did the nasopharyngeal cultures show a return of the hemolytic streptococcus. These five good responses were by patients with tonsillitis as well as pharyngitis, and one was associated with severe scarlet fever.

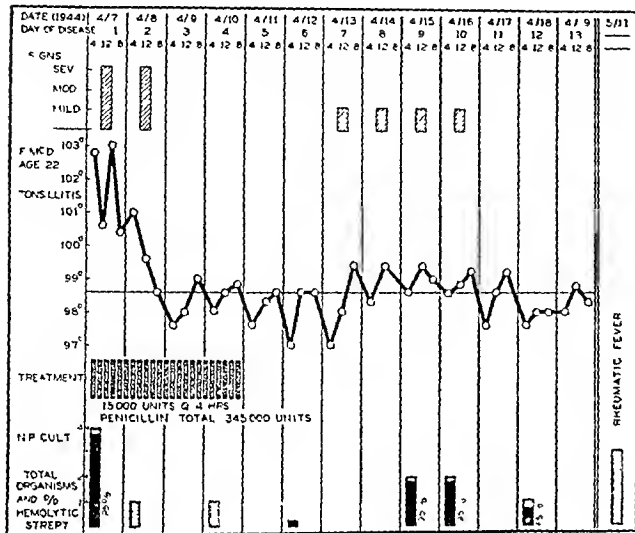


Chart 4—Penicillin therapy for ninety-two hours: Clinical course and bacteriologic findings in pharyngitis-tonsillitis treated with penicillin for ninety-two hours. The nasopharyngeal culture, which before penicillin showed a heavy growth of almost purely hemolytic streptococci, after twenty-four hours showed only a few colonies (less than 50) and no hemolytic streptococci. Twenty-four hours after discontinuing penicillin hemolytic streptococci were isolated by mouse inoculation and on later cultures were present in almost pure culture. Simultaneously, a mild clinical relapse occurred. The patient was discharged on the thirteenth day of illness, the culture on the preceding day continuing to show hemolytic streptococci. Three weeks after discharge the patient returned with a severe first attack of rheumatic fever. The nasopharyngeal culture on this admission showed no hemolytic streptococci.

The initial response followed by a high rate of recurrence suggested to us that penicillin, perhaps while temporarily controlling the infection, interfered with the normal development of immunity. Therefore we decided to try using penicillin for a shorter period, believing that in this way there might be no interference with the natural spontaneous immunization and at the same time a favorable modification of the clinical course.

Nine patients were given penicillin for a twenty-four hour period, 6 receiving 150,000 units total dosage; 3 received 100,000 units, together with routine sulfadiazine therapy. In each group there was 1 case of acute peritonsillar abscess. While the twenty-four hour nasopharyngeal cultures were negative on all except 1 of the patients, the hemolytic streptococci regularly returned in all except 1 case. The clinical course and bacteriologic results in a patient given 150,000 units of penicillin are given in chart 5. This shows also the effect of penicillin on a patient with peritonsillar abscess.

Because the clinical and bacteriologic results had not been at all striking following a twenty-four hour course of penicillin, it was decided to investigate the response to penicillin in the dosage of 15,000 units every four hours, extending the course of therapy to six days. Ten cases are included in this group, and the results are uniformly favorable, except in 1 instance. Nine showed no signs nor symptoms, and all of the cultures were negative after thirty-six hours of therapy. When penicillin was discontinued after six days, the cultures apparently remained negative for hemolytic streptococci and there was no return of symptoms and no later

development of any complication. An example of this clinical and bacteriologic response to penicillin is shown in chart 6.

The course of the 1 exceptional case (chart 7) in this group is most instructive:

W. F., aged 22 years, was admitted to the hospital on May 28, 1944, having had nasal congestion and slight malaise for thirty-six hours. On May 29 his temperature rose to 103.8 F. and he complained of severe sore throat and difficulty in swallowing and breathing. The pharynx was much injected and edematous; the tonsils were large, erythric and spotted with exudate; the cervical nodes were slightly enlarged and tender. The remainder of the examination was negative. There was no rash. The white blood cell count was 31,600, with 92 per cent neutrophils, 7 per cent lymphocytes and 1 per cent monocytes. Urinalysis was negative.

Penicillin, 15,000 units intramuscularly every four hours, was started about twenty hours after the onset of acute symptoms and was continued for six days (540,000 units). Shortly after penicillin was started the patient developed a pronounced scarlatinal rash, which disappeared in about thirty-six hours. The nasopharyngeal culture made at the start of therapy showed a heavy growth of colonies, 50 per cent of which were group A hemolytic streptococci identified as type 3 (Lancefield). Twenty-four hours after penicillin was started the culture was negative for hemolytic streptococci and remained negative throughout the course of therapy. Twenty-four hours after penicillin was discontinued the culture showed hemolytic streptococci by mouse inoculation and following this, in cultures, they appeared in increasing numbers. With the return of the hemolytic streptococci, first acute purulent sinusitis and then acute pneumonia developed. These conditions were confirmed by x-ray examinations. The patient's condition was not critical at the time of the complications; consequently penicillin therapy was not resumed.

COMMENT

This study, like many other scientific investigations, answers a few questions but poses many more. We have evidence that penicillin, if given over a sufficient period of time, will shorten and alleviate the acute symptoms

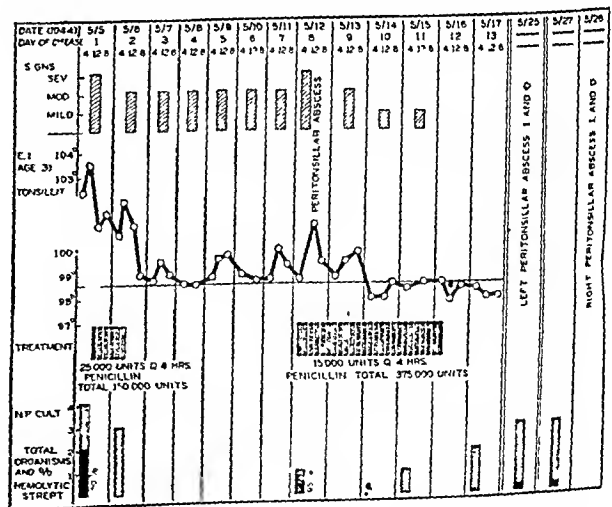


Chart 5—Penicillin therapy for twenty-four hours. Clinical course and results of nasopharyngeal culture in pharyngitis-tonsillitis treated with penicillin (150,000 units) during first twenty-four hours of illness. For forty-eight hours the clinical course was satisfactory, the twenty-four hour culture showing no hemolytic streptococci. However, a severe peritonsillar abscess (left) developed by the eighth day and disappeared completely during a four day course of penicillin therapy. The patient was discharged but returned eight days later with a recurrence of the left peritonsillar abscess. This was drained and in three days was followed by a severe right peritonsillar abscess, which was treated also by incision and drainage.

of hemolytic streptococcal pharyngitis-tonsillitis. There is some indication that complications of this disease can be prevented and effectively treated. Our most striking

observation is the effect of penicillin on the hemolytic streptococcus in the nasopharynx. What causes it to disappear? Is it the bacteriostatic action of penicillin? What role is played by the body's immune mechanism? Is there a possibility of eradicating completely the hemolytic streptococcus from the body? If so, what effect might this have on the course of the disease and on

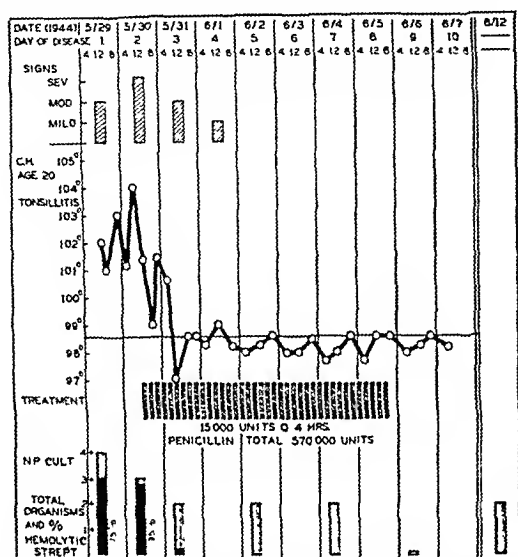


Chart 6.—Penicillin therapy for six days. Clinical course and bacteriologic findings in pharyngitis-tonsillitis treated with penicillin for six days. Treatment was started twenty-four hours after onset, when temperature had risen to 104 F. with the swelling and edema of the pharynx and tonsils becoming extreme. The clinical response was rapid. The hemolytic streptococci disappeared from the nasopharynx and had not returned seven days after penicillin was discontinued.

the occurrence of rheumatic fever or glomerulonephritis? From this preliminary study we do not presume to have the answers to all these questions.

On the basis of bacteriologic findings, the 54 cases of the study may be divided into three groups. First is a group of 9 cases in which no hemolytic streptococci were found in the cultures. In each of these at least four nasopharyngeal cultures were taken, in 1 eleven cultures, and all were negative. In several instances the pharynx, the exudate and the tonsillar crypts were cultured in addition to the nasopharynx but still no hemolytic streptococci were found. It is true that 6 of these patients received penicillin, and on the basis of our observations this may explain some of the subsequent negative findings. Clinically these patients were in no way distinct, and the local conditions were so pronounced that it has been difficult to explain the negative cultures. The pneumococci or *Hemophilus influenzae* isolated in these cultures may have produced the disease, but this does not seem likely because of the nature of the infection.

In a recent report on endemic exudative pharyngitis and tonsillitis¹⁰ in which the mild as well as the severe infections were studied, only 25 per cent showed beta-hemolytic streptococci in the pharyngeal culture and also exhibited a rise in titer of streptococcus antibodies during convalescence.

The second group includes 7 cases in which the findings were "slightly" positive. In 3 of these no colonies were identified on the plates but the group A streptococcus was obtained by mouse inoculation. In

these cases we were not convinced that the organism isolated was the causative agent of the disease. Anti-streptolysin titers of the blood may give an answer to this problem.

Finally, 38 cases showed many colonies of hemolytic streptococci and in 30 of these it was found in almost pure culture. In these cases there seemed little question about the etiology and in these penicillin showed its most striking effect. A most convincing demonstration of the efficacy of penicillin is to contrast the twenty-four hour culture of a treated patient with the initial culture when this has shown a heavy growth of hemolytic streptococci. Of 25 such cases 21 were negative, 3 were "slightly" positive and in only 1 was the blood plate of the twenty-four hour culture "appreciably" positive.

A uniformity and consistency in the bacteriologic patterns was obtained throughout the study. The nasopharyngeal culture was found preferable to the pharyngeal culture, particularly because the plates were less contaminated with mouth organisms. The nasopharyngeal specimen must be procured by a person experienced in this procedure, and all steps of the laboratory routine must have the constant attention of an experienced bacteriologist. The determination is not presented as strictly quantitative but as roughly quantitative and, used this way, the end points are accurate. Many determinations have been made on the same specimen and a few checks on the same patient and only the expected slight discrepancies have been found. Furthermore, each case, treated or control, shows a pattern in the serial cultures and these have shown a well defined uniformity. Again, following the discontinuation of penicillin in cases in which the hemolytic streptococci return to the nasopharynx, the serial cultures follow a pattern. A few organisms may be found twenty-four hours later; a heavy growth does not occur for forty-

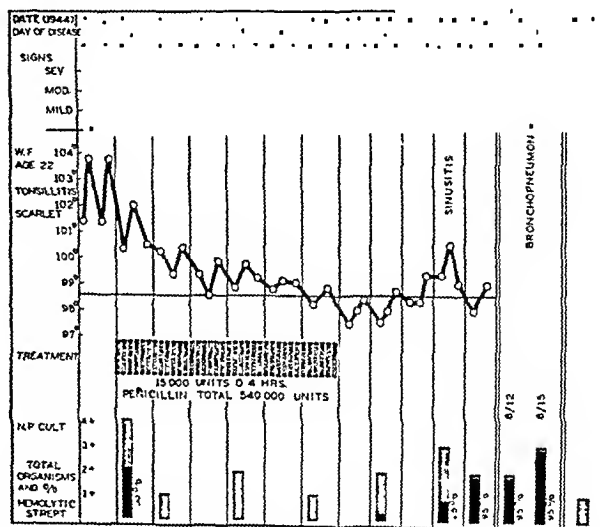


Chart 7.—Penicillin therapy for six days. Clinical course and bacteriologic findings in pharyngitis tonsillitis and scarlet fever treated with penicillin for six days. Following discontinuation of penicillin, hemolytic streptococci returned to the nasopharynx, and hemolytic streptococcus sinusitis and pneumonia developed subsequently.

eight to seventy-two hours. In our study the consistency of these changes was impressive.

Our observations show that the frequency with which hemolytic streptococci return to the nasopharynx is dependent on the duration of penicillin therapy. While 7 of 9 patients treated for twenty-four hours showed a return of hemolytic streptococci, 4 of 9 treated three

10 Commission on Acute Respiratory Diseases: Endemic Exudative Pharyngitis and Tonsillitis: Etiology and Clinical Characteristics, J. A. M. A. 125:1165 (Aug. 26) 1944.

to four days became positive, and in only 1 of 10 given penicillin for six days were the cultures again positive. The 4 clinical relapses of pharyngitis-tonsillitis, 2 peritonsillar abscesses and 2 post-tonsillitis hemolytic streptococcal pneumonias occurring in the penicillin treated cases all followed a return of hemolytic streptococci in large numbers to the nasopharynx. On the contrary, 15 patients with negative cultures following the cessation of penicillin had no complications. Taking the group as a whole, complications developed when the cultures were "strongly" positive and did not occur with negative cultures. These findings afford evidence that serial nasopharyngeal cultures can be a guide to prognosis and to penicillin therapy.

The occurrence of clinical relapse in 4 of the 9 patients who had received penicillin over a three to four day period deserves particularly careful consideration. There was no similar case among the control or sulfadiazine treated patients or among those who had penicillin for a single day. On the other hand, in no instance did a relapse or complication develop during the time the penicillin was being administered. Several times during the past winter we have observed post-tonsillitis hemolytic streptococcal pneumonia and empyema develop in the face of adequate sulfadiazine therapy, and there have been a number of similar instances of peritonsillar abscess which occurred while sulfonamides were administered. These observations demonstrate the greater efficacy of penicillin against the hemolytic streptococcus. The effect may be so great that one can speculate that the natural immune response may be interfered with and that it is necessary either to eradicate the hemolytic streptococcus or to allow more than the usual time for the development of a protective immunity.

Much immunologic investigation remains to be done in connection with the use of penicillin in this disease. It is of practical value to appreciate the greater effectiveness of penicillin and that it should be used without delay in any serious, progressive hemolytic streptococcal infection.

SUMMARY AND CONCLUSIONS

1. Fifty-four patients with severe acute pharyngitis-tonsillitis were studied clinically and bacteriologically. Forty-five of these had cultures positive for group A (Lancefield) hemolytic streptococci and were suitable for making a comparison of different therapeutic measures.

2. In 28 of the 45 positive cases, penicillin was given intramuscularly in a dosage of 15,000 units every four hours over periods varying from twenty-four hours to six days; sulfadiazine was given in 11 cases and no specific therapy in 6.

3. Penicillin was found to exert a pronounced effect on the number of hemolytic streptococci in the nasopharynx. The culture made twenty-four hours after the start of penicillin was almost always negative, and the serial cultures during the course of therapy remained negative. When penicillin was discontinued, hemolytic streptococci tended to return gradually to the nasopharynx. The frequency of their reappearance in our cases was inversely proportional to the length of time the drug was administered.

4. In 19 patients treated with penicillin for sixty-four hours or more symptomatic relief commenced in eight to twelve hours after the beginning of therapy and was complete in twenty-four to thirty-six hours. However, clinical relapse of the pharyngitis-tonsillitis occurred in 4 of the 9 patients treated for less than four days but

in none of the 10 treated for six days. One patient treated with penicillin for six days subsequently developed acute hemolytic streptococcal sinusitis and pneumonia. Throughout the study relapses and complications always were associated with the presence or reappearance of hemolytic streptococci in the nasopharynx.

5. This study reveals further evidence of the high antihemolytic streptococcal action of penicillin and emphasizes its value in dangerous hemolytic streptococcal infections. Penicillin in minor hemolytic streptococcal infections may be beneficial, but further investigation will be required to ascertain its exact indications and contraindications in these conditions.

NATIONAL HEALTH BASED ON LOCAL HEALTH UNITS

HAVEN EMERSON, M.D.

AND

REGINALD M. ATWATER, M.D.

NEW YORK

It is almost two years to a day since the House of Delegates of the American Medical Association resolved "That the Trustees be urged to use all appropriate resources and influences of the Association to the end that, at the earliest possible date, complete coverage of the national area and population by local full time modern health services be achieved."

Resolutions of identical intent were passed by the American Public Health Association in October 1942 and by the Conference of State and Provincial Health Authorities of North America in March 1944. Since the creation in August 1942 of a Committee on Local Health Units of the American Public Health Association, considerable progress has been made in assembling pertinent facts and in obtaining consideration and support from state health officers for a pattern of local health services which gives promise of a reasonable satisfaction of the resolution as soon as medical, nursing and engineering personnel can be returned from the military to the civil needs of our people.

A progress report of the committee was published in the April 1943 issue of the *American Journal of Public Health* in which will be found the description of the existing inadequacy of local health services in continental United States and provisional suggestions for 1,127 local health jurisdictions to cover all the states, such units to be of single or several counties, city-county or districts, the latter including parts of one or more counties.

After correspondence and personal conference with the health officers of thirty of the states it was found, after adding a few districts in some states and consolidating areas in other states on the recommendation of the respective state health officers, that 882 local units were agreed on, the same number for these thirty states as originally suggested by the committee, although not in all instances the same number in each state as originally proposed.

It appeared then that the basic proposals as to size of area and population and in respect to necessary medical and associated personnel for such local health units were acceptable at least in principle to those officers of state government whose attitude toward the complete

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-Fourth Annual Session of the American Medical Association, June 16, 1944.

coverage of their states with local health services would be a determining factor in further progress.

At the present writing agreement as to the desirability of such local health units and agreement as to number and boundaries in the respective states has been received from forty-two of the states.

Until further consideration with the health officers of the other six states has adjusted pending differences of opinion as to details of size and number of the local health units suggested by the committee, a definitive number of units for all forty-eight states cannot be presented, but it would appear that approximately 1,197 such local units will be sufficient, economical and efficient for the needs of the nation.

The next step would appear to be the listing of existing full and part time personnel now employed in local health services in each of the proposed units and of the salary and total costs of maintaining such facilities as now exist, supplemented by a description in similar detail of the desirable personnel and estimated costs of a balanced and adequate modern health service under a trained full time medical officer of health.

Information of this kind is being obtained from federal, state and local sources and will be presented in a report of the committee to be published early in 1945 in such form as to be easily understood by officers of local and state government and by voluntary citizen organizations, and local and state medical societies.

From studies made available to the committee through the courtesy of the U. S. Public Health Service, it appears that existing laws in thirty of the states make possible by one procedure or another the creation of such local health units as we are considering, but few if any state statutes cover each of the essentials of permissive legislation required.

A special committee of the National Conference of Commissioners on Uniform State Laws is now preparing a draft of such legislation as would be desirable generally among the states to provide the necessary authority for creation of such districts as are proposed, and to safeguard the qualifications of professional and other personnel, to secure tenure of office during competent behavior, and to permit or require the raising of tax monies sufficient to support such local health departments.

It is expected that state and county medical societies will inform themselves as to the local units of health service approved by the state health officer, familiarize themselves with the need for enabling legislation, if any, support such appropriate laws as are before their legislature for this purpose, and share with other influential bodies of public opinion and action that are interested in achieving adequate modern local health service under full time professionally expert medical direction. Up to the present time the strongest favorable influences appear to be those of farm families and organizations representing them, and the agricultural colleges of state universities. No opposing interests have developed, unless we consider in some states a passive resistance to change by the large numbers of part time lay and medical health officers of villages and towns, to replace whose services by those of trained public health personnel is one of the major objects of the proposed units. Only at real sacrifice of time and money can a busy medical practitioner in his spare time serve the indispensable purposes of public health officer.

There are not less than 38,000 units of local government in the United States and there are apparently

about 10,000 communities of small size and small resources whose only representative of health service is a layman appointed or elected to other office and serving ex officio, without any special qualification for his duties.

It has been said on good authority that, at the present rate of progress in developing full time county health services for the 3,070 counties of our states, it will take more than a hundred years to cover our nation with such local health services. Many counties are too poor in population and resources to maintain a good single county health department.

The resolutions referred to and the apparent acceptance of the principle of units of local health service as presented by the committee of the American Public Health Association seem to demand progress more swift and practical.

With local units of government of the size and character proposed, each provided with medically trained and professionally expert leadership through full time health officers, assisted by public health nurses in the ratio of 1 to each 5,000 of population, with at least one public health engineer and suitable numbers of field sanitarians, and with appropriate clerical personnel, the state departments of health will be able to develop to a higher grade their own proper supervisory consultant, advisory and central staff functions, on a statewide basis, and the federal health services can concentrate on interstate and international public health matters, for which they are well qualified.

The two sources of most powerful potential influence for the establishment of competent local health services for all the people of our nation, in addition to the support of the body of professionally interested workers in existing civil health departments, are the members of the American Medical Association through their county, district and state or national organizations, and the lay and professional members and supporters of local, state and national volunteer health agencies, such as are included within the National Health Council. While the original or inciting resolution, initiated by this section, has been followed by sympathetic action in the House of Delegates and by appropriate editorial support in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*, no overt action to make the influence of the American Medical Association effectively felt publicly has been reported from the Trustees. Nor has any state medical society accepted the opportunity of exercising its influence for national health by organizing the favorable opinion of its members through standing or special committees with respect to the number, boundaries and services of local health for its state.

Public health services at the local level are to a great extent of a personal nature, directly related to the private practitioner of medicine and to his patients. These services are best provided where the local communities served are well informed about and prepared to take their share in the support of health functions through their elected officers of local government.

A medical officer of health is today as much a specialist in the application of the medical sciences for public protection against disease as any of the clinical specialists in medicine and surgery are specialists in their respective fields.

Professional graduate education and practical experience training for the administrative and leadership responsibilities of a medical officer of health are in the main as exacting, time consuming and expensive as are similar preparation for a career in most of the clinical specialties.

Rarely can a community or a group of neighboring communities with less than about 50,000 population in one or more counties support a qualified medical officer of health and the necessary associated personnel.

It is in the best interests of national health and the best interests of the medical profession that local units of government be authorized and organized to provide good health services under medical leadership.

The facts are at hand on which sound policies can be based. An acceptable pattern for local health services has been favorably received by the public health professions. Active systematic, sustained support of the American Medical Association, such as was given over a period of thirty years on behalf of model vital statistics laws and their enforcement, is now needed to bring about the achievement so well and unanimously voiced by the House of Delegates two years ago.

600 West 168th Street.

ABSTRACT OF DISCUSSION

DR. RICHARD F. BOYD, Springfield, Ill.: It is generally recognized that in order to experience a satisfactory increase in the number of full time adequately staffed county and multiple county health departments several factors are involved. First of all there must be legislation permitting the establishment and maintenance of such health departments. In Illinois such a statute was enacted in 1943. This law was carefully prepared after consultation with leaders in the public health field and appears to be quite adequate to meet this need. The interest and active support of professional groups is also a necessity if a satisfactory growth of local health service is to develop. This interest has been evidenced in Illinois by the strong support of the state medical, dental and public health associations at the time at which the legislation mentioned was obtained. There is every indication that this support will be enjoyed by the county and multiple county health departments when they come into existence, since representation of the medical and dental groups on local boards of health is provided by law. Interest of the populace in general is also necessary to the growth of local health departments. This interest has been manifested by the organization of a statewide public health committee in Illinois for the purpose of promoting better public health services and by the endorsement of the county health law by many statewide organizations. There must be also a definite plan of development, as outlined by Drs. Emerson and Atwater. A plan for the establishment of twenty-seven single county and thirty-two multiple county health departments was submitted to and approved by the Committee on Local Health Units of the American Public Health Association, to which reference was made by the authors of this paper. This plan is now in the process of implementation by the Illinois Department of Public Health assisted by the aforementioned professional and lay groups. Three county health departments have been established under the new county health law. Two of these counties were previously organized on a war emergency basis, while the third has had no prior experience with local health work as carried on by county health departments. Having met the criteria as outlined, and judging from the action of these counties in establishing health departments under the provisions of the new law, it is believed that we may expect a satisfactory growth of adequately staffed county and multiple county health departments during the next several years, resulting both from the reorganization of existing health departments established on a war emergency basis as well as the establishment of health departments in previously unorganized counties.

DR. FELIX J. UNDERWOOD, Jackson, Miss.: In my state, of the eighty-two counties sixty-five have full time county and district health departments; but for the war, all eighty-two would have been organized by this time, I am sure. Mississippi is a small, poor state but a state that is tremendously interested in public health. When I was a county health officer a number of years ago in a county with a population of less than 40,000, I observed how the city health officer of the principal town,

the county seat, with a population of only 5,000, and the county health officers were wont to pass the buck from one to the other. Too frequently when I was approached about a problem within the confines of the city I would say "This is within the city limits, you see, so you should see Dr. So and So about that" (the city health officer). Then the city health officer would say "After all, Aberdeen is in the county, and the county is over all, therefore the county health officer should attend to this." And most of the time the matter wasn't attended to without a lot of passing of the problem back and forth. I am glad to see that condition corrected to a great extent, and, having one department responsible for carrying on the health work in the area, one can place responsibility. I am glad to see so much duplication of effort and overlapping being done away with, as it will be more and more as this plan is developed to perfection. We are dropping a lot of politics too as we go along. That has been the bane of our existence in the past, but it is less and less so as the years pass. Think of the attitude of Congress toward public health today as shown by appropriations for public health purposes! Think of the attitude shown by the several state legislatures by their being willing, sometimes quite willing and anxious, to make proper appropriations for the furtherance of public health work! Think of the county boards of supervisors and the mayors and councilmen of our cities! Never before have we seen such a manifestation of confidence and belief in public health in this country. It is up to us. I believe we are meeting the challenge quite well. I think we are on the eve of the greatest public health development in this country that we have ever seen, and that will come in postwar days when personnel can be had. There will be no further trouble about money and less trouble about politics, I think.

DR. GILBERT COTTAM, Pierre, S. D.: We in South Dakota are in the embryonic stage just now. Only within the last few months have we even formulated a plan and sent it in to be considered. I wasn't very strongly sold on it at the start. I had been a surgeon for a number of years, and when I came into public health I didn't know much about it. But it is a tremendous problem, and in a state like South Dakota, where right now we are facing a situation of shifting population, we have new areas which have grown up around war industries and we don't know whether they are going to be permanent or not. So we cannot predicate plans definitely until we know for sure; however, we are doing the best we can and we have sent our plan in, dividing the state up into fifteen districts. We have now only two full time health units in the state, one a county unit in the eastern, well populated part of the state, and another in the Black Hills area, both working well and serving as splendid models for the future. This winter, when our state legislature meets, I hope to be able to go before it with enough information to show it the value of this sort of thing and get enough support so that then with the help that we shall get from the federal government we shall be able to do something.

DR. JAMES R. SCOTT, Santa Fe, N. M.: I think New Mexico was one of the first states that developed the system of district health. We have been operating since 1935. I was glad to hear from Drs. Emerson and Atwater's paper that they are going ahead to develop legislation making permissible the establishment of these district health offices. If Drs. Emerson and Atwater want to learn several mistakes to avoid, I can supply them with several that made possible the district health work in New Mexico. We are handicapped by being about the fifth largest state in the Union in extent of mileage, and we have ten districts. Our population is widely scattered except for a few centers of population. It is essentially a rural state. I do not know whether Mississippi is poorer than New Mexico, or vice versa. We also are financially embarrassed. We expect, perhaps in the legislature which meets in January, to attempt to revise the public health act, known there as the District Health Act. The main feature of our work is that we are extending certain types of public health endeavor to a much larger percentage of the population than was true under the old county setup; however, we are not doing anywhere nearly a complete job. When you consider that one district health officer in New Mexico has a territory in geographic extent which is equal to the entire New England states omitting Maine, you

can see that we made some mistakes in setting up our districts and they, unfortunately, were embodied in the District Health Act, and to unscramble that act will take action of the legislature.

DR. JOSEPH W. MOUNTIN, Washington, D. C.: Failure on the part of local governments to function effectively in service fields is not due to lack of appreciation of human needs; rather it may be attributed to defects that are inherent in the structure of local government. If a unit of government is to render the comprehensive kind of service that makes up a suitable public health program, it must possess certain attributes. First of all such a unit must have a statutory basis for its existence, including powers of taxation and law enforcement, and it must have authority to operate essential facilities and services. Second, the size of the population and of the tax resources must be sufficient to assure economical operation and stability of financial support. In the continental United States there are some 38,350 units of local government, exclusive of school and improvement districts. They range in population from a dozen or so inhabitants to several million. More than 20 per cent of the country have less than 10,000 inhabitants. Obviously the smaller political units do not constitute suitable health jurisdictions. If health services are to be administered locally, and I believe it is quite generally agreed that this for the most part is desirable, the question of forming suitable administrative units must be faced frankly, and I might even say heroically. Appropriate combinations of preexisting political units may be the answer to the problem, but if this arrangement does not prove feasible some other scheme must be devised. I think the Committee on Local Health Units under the chairmanship of Dr. Emerson has done a masterly job. The committee has mapped the entire country into logical health jurisdictions and secured almost complete agreement on the part of state health officers. The more difficult job still remains of making these theoretically desirable districts political realities. Until this has been accomplished we shall not have a firm foundation on which to build a suitable local framework for carrying the expanding program of public health.

DR. REGINALD M. ATWATER, New York: Dr. Underwood of Mississippi, who is president of the American Public Health Association, has spoken of the complete coverage in public health which Mississippi enjoys. Let me point out that one of the reasons for this complete coverage grows out of the close linkage between the state medical society and the Mississippi State Department of Health. It would be a splendid arrangement if each state medical society took the initiative with its state health department to see to it that each state had a comprehensive plan for complete coverage. This would be in line with the resolution of the American Medical Association.

Public Health in Korea.—Public Health is under the direction of the sanitary section of the police bureau of the government general. Plans are made in the office of the government general and proceed through provincial and county officials to the local police. A civilian health officer and two assistants usually are assigned to each of the thirteen provinces. One physician or more and a number of nurses are stationed at each provincial hospital, however, and work that is not handled by the local police and police physicians is carried on by this provincial health staff. The officially defined duties of the provincial health staff, working with the police, include arrangements for clinical tours by provincial hospital physicians, quarantine inspection at all ports, inspection of water, food and drugs, control of epidemic and endemic diseases, inauguration of measures for the control of opium and leprosy, and veterinary problems. In practice, although regular tours by the full time provincial physicians actually are carried out at intervals through the year, the great majority of contacts with the masses of the population are made by police physicians. These physicians receive a small monthly salary for part time official services and are allowed to carry on a private practice at the same time. Usually the police physicians are found only in what respond to county seats. Practically all physicians engaged in public health work in Korea are Japanese.—Simmons, James S., and others: *Global Epidemiology*. Philadelphia, J. P. Lippincott Company, 1944.

THE TREATMENT OF PREMENSTRUAL DISTRESS. WITH SPECIAL CONSIDERATION OF THE ANDROGENS

S. CHARLES FREED, M.D.

SAN FRANCISCO

Relatively little attention has been paid by most physicians to the distress that many women undergo during the premenstrual period which usually disappears with the onset of menses. The disturbance at this time of the ovarian cycle has been termed premenstrual tension. The symptoms arising here are varied in character and in intensity and occur in various combinations, the most common complaints being nervousness, irritability, depression, emotional instability, headache, nausea and a feeling of tenseness. The most common signs are bloating of the abdomen and subcutaneous edema. In addition, patients may complain of a feeling of tightness of the skin, pruritus and swelling of the vulva and gastrointestinal disturbances such as vomiting, diarrhea or cramps. Occasionally one encounters bizarre manifestations such as premenstrual coma, convulsions, nymphomania and arthritic and neuritic pains. There is often observed, however, an aggravation of conditions which have little relation to ovarian function, such as asthma and hay fever, dermatologic lesions and quite commonly psychiatric difficulties. Apparently it is only when these symptoms produce extreme suffering that the physician is confronted with them, and it is often the psychiatrist who is first consulted. It is quite possible that the reason for this general unawareness for such changes is the acceptance by the woman herself that these disturbances are the normal part of a woman's fate and thus she makes little effort to seek relief unless they are severe.

Frank¹ was first to call particular attention to the syndrome of premenstrual tension. Israel² reported a number of cases of this disturbance, and the reader is referred to his article for a detailed description of typical cases. Greenhill and Freed³ pointed out the widespread occurrence of less intense degrees of this condition, which they designated as premenstrual distress. They postulated that there is a common etiologic factor for the two conditions, the difference between the two being quantitative. They maintained that these different and often unusual reactions result from a single metabolic change, namely the retention of sodium by the tissues induced by the sex steroids operating during the premenstrual phase. This retention of sodium is associated with an increase in extracellular fluid, so that the swelling of the various tissues gives rise to the respective symptoms. Thus, edema of the intestine induces nausea, of the brain migraine and other neurologic symptoms, and so on. This concept is supported by the work of Thorn and others⁴ on water balance studies during the menstrual cycle and the success in treating patients with premenstrual tension by ammonium chloride,³ which reduces the amount of sodium retention and extracellular fluid of the tissues.

From the Department of Medicine, Mount Zion Hospital.

Supplies of testosterone propionate (Neo-Hombreol) and methyl testosterone (Neo-Hombreol [M]) were furnished by Roche Organon, Inc. through the courtesy of Dr. Leo A. Pirl.

1. Frazer, R. T.: *The Hormonal Causes of Premenstrual Tension*, *Arch. Neurol. & Psychiat.* 26: 1053 (Nov.) 1943.

2. Israel, S. L.: *Premenstrual Tension*, *J. A. M. A.* 110: 1721 (May 21) 1938.

3. Greenhill, J. P., and Freed, S. C.: *The Electrolyte Therapy of Premenstrual Distress*, *J. A. M. A.* 117: 504 (Aug. 16) 1941.

4. Thorn, G. W., Nelson, K. R., and Thorn, D. W.: *A Study of the Mechanism of Edema Associated with Menstruation*, *Endocrinology* 22: 155 (Feb.) 1938.

In my experience about 40 per cent of normal menstruating women suffer a considerable amount of distress during their premenstrual period. The disability of most of these women during this period is moderate and obviously affects chiefly their intimate social contacts. Nevertheless the subjective disturbances undoubtedly lead to inefficiency and a decrease in ability to concentrate. As the premenstrual distress averages about five days each month, it becomes apparent that there may be a huge economic loss when these relatively minor errors are summated.

The disharmony in social relationships during the premenstrual period of suffering women is another factor of great importance. This feature is often brought forward by patients who admit that they are "difficult to live with" during this phase. It has been observed that the cyclic distress of these women may intensify social difficulties and frequently perpetuate antagonisms which might lead to drastic action such as divorce, when otherwise there would be a satisfactory adjustment.

The alleviation of premenstrual distress or tension is therefore considered of sufficient importance from the standpoint of health, society and economics to warrant a therapeutic study in order to arrive at an effective and convenient method for the relief of the large number of women who undergo this disturbance. Ammonium chloride therapy has proved quite satisfactory, but it is rather inconvenient. Recently some success has been reported with the use of androgens,⁶ and it appears likely that this type of therapy might prove more satisfactory.

METHODS AND RESULTS

The women selected for study were from my private practice. Six of the 60 total patients were referred primarily for the treatment of premenstrual tension, usually by a psychiatrist. The others were found to suffer from significant degrees of distress, on questioning during their visits for various other reasons. Only those were chosen for study who admitted that they would be highly gratified to obtain relief during this phase, and none were included who stated that though they were uncomfortable they could tolerate the unpleasantness without too much trouble.

TABLE 1.—Treatment of Premenstrual Distress with Testosterone Propionate

Number of Patients	Number of Treatments	Severity of Symptoms		
		Before Treatment	After Treatment	
12	18	++	3	+
			15	0
13	25	+++	2	++
			5	+
			18	0
6	13	++++	1	++++
			2	++
			1	+
			9	0

Thirty patients received injections of testosterone propionate on the tenth and third days preceding the expected menses. The amounts of this androgen administered depended on the severity of the symptoms, the dosages being either 10 or 25 mg. at each injection. The results of this treatment are shown in table 1. The severity of the symptoms is designated by the num-

ber of plus marks, the most extreme being 4 plus, graduating down to 0 or absence of symptoms. The relief of the patients is demonstrated so that the residual symptoms are shown by the number of plus signs in a similar manner. Many patients received therapy for more than one menstrual period, as shown in the table.

TABLE 2.—Treatment of Premenstrual Distress with Methyl Testosterone

Number of Patients	Number of Treatments	Severity of Symptoms		
		Before Treatment	After Treatment	
10	15	++	1	+
			14	0
16	22	+++	6	+
			16	0
4	7	++++	1	++++
			3	+
			3	0

It is apparent that most patients obtained definite relief following this treatment. It is only, however, by intimate contact with the patient that the doctor can really appreciate the gratification of the patients for this relief, which in many cases is quite dramatic. Occasionally the injections of testosterone propionate resulted in delayed menses, but otherwise no untoward effects were encountered.

In the second group of 30 patients the oral androgen methyl testosterone was administered in doses of 10 mg. daily, starting ten to seven days before the expected onset of menses. Table 2 indicates the results with this therapy in the same manner as in table 1.

It will be observed from this table that the oral androgen is likewise effective in combating premenstrual distress and tension, perhaps more so than with the injected material. It is my impression that patients were even more gratified with the oral therapy than with the parenteral. In only 1 case was there an untoward reaction following administration of methyl testosterone, and this consisted of nausea.

COMMENT

It is admitted that practically any therapy will relieve a certain number of women of their premenstrual distress through the power of suggestion. Anything which elevates the threshold to psychic stimuli will probably eliminate much of the suffering of these women during the premenstrual phase. Nevertheless a majority of cases do not respond to mild psychotherapy alone, and most patients will report a return of symptoms when specific therapy has been omitted. It has also been observed that when the timing of the menses has been faulty the therapy has proved ineffective, which again indicates that the psychic factor may be of relatively minor importance.

There is some controversy regarding the etiology of premenstrual distress or tension. For a number of reasons it would appear that the increased secretion by the ovaries of estrogen during the premenstrual phase is the responsible factor. Nevertheless, Gillman⁶ claims to have induced similar symptoms by administering large doses of progesterone. On the other hand, Israel⁷ reported that progesterone produced relief of premenstrual tension. In view of the fact that both progesterone and androgens have been shown by a

5. Greenblatt, R. B.: Syndrome of Major Menstrual Mollimina with Hypermenorrhea Alleviated by Testosterone Propionate, J. A. M. A. 115: 120 (July 13) 1940.

6. Gillman, J.: Nature of Subjective Reactions Evoked in Women by Progesterone, with Special Reference to Problem of Premenstrual Tension, J. Clin. Endocrinol. 2: 157 (March) 1942.

number of workers to be effective in combating premenstrual distress and that these substances may be classed as antagonists to estrogen, it seems highly probable that the symptoms are the result of high tissue levels of estrogen during the premenstrual phase. This is further supported by the evidence submitted by Biskind and his associates,⁷ who maintained that premenstrual tension is encountered in patients who have a vitamin B deficiency. This deficiency leads to impairment of the liver to destroy estrogen, with the resulting high level of estrogen circulating in the blood stream and the administration of vitamin B is followed by relief of symptoms coincident with the increased destruction of estrogen of the liver. Furthermore, it may be considered that some of the so-called toxic symptoms induced by certain rapidly absorbed estrogens such as diethylstilbestrol are similar in character to premenstrual distress, that is, headache, nervousness, nausea, bloating and the like. It would appear, therefore, that androgens are effective in relieving the premenstrual distress by neutralizing the endogenous ovarian estrogens sufficiently to prevent the electrolytic changes which give rise to the symptoms.

It is well worth the physician's time and effort to question each menstruating woman regarding any symptoms arising in the premenstrual phase and relieved with the onset of menses, and to administer the appropriate therapy. The patients are most grateful for their relief. They are able to work more efficiently during this time, and in a number of instances social difficulties have been resolved sufficiently so as to prevent serious breaches. Since premenstrual distress is so widespread, immense benefit may be derived from concerted effort to give relief.

Premenstrual distress can be relieved by a number of methods aimed at different elements of the disturbance: (1) progesterone and androgen, the neutralization of estrogen; (2) vitamin B, permitting the normal destruction of estrogen, and (3) ammonium chloride, reducing the sodium retention produced by estrogen. Except for those patients showing signs of vitamin B deficiency, it is my impression that both ammonium chloride and androgen are the most effective and dependable. Parenteral androgen, however, requires relatively frequent visits to the physician. Ammonium chloride must be administered several times daily for two weeks preceding the onset of menses and in varying doses, requiring greater cooperation from the patient than with androgens. It would appear, therefore, that methyl testosterone administered once daily for from ten to seven days before the onset of menses is the surest and most convenient therapeutic agent for the relief of this condition.

SUMMARY

1. Premenstrual tension and distress is a widespread condition occurring in about 40 per cent of menstruating women.
 2. Relief of this condition is greatly beneficial from the standpoint of health, society and economics.
 3. Both parenteral and oral androgens afford satisfactory relief of this condition.
 4. Oral androgen, methyl testosterone, is the surest and most convenient therapeutic agent in this respect.
- 450 Sutter Street.

7. Biskind, M. S.; Biskind, G. R. and Biskind, L. H.: Nutritional Deficiency in the Etiology of Menorrhagia, Metrorrhagia, Cystic Mastitis and Premenstrual Tension, Surg., Gynec. & Obst. 78:49 (Jan.) 1944.

EARLY IMMUNIZATION AGAINST PERTUSSIS WITH ALUM PRECIPITATED VACCINE

WALLACE SAKO, M.D., Ph.D.

W. L. TREUTING, M.D., M.P.H.

NEW ORLEANS

SURGEON (R) DAVID B. WITT

U. S. PUBLIC HEALTH SERVICE

AND

SURGEON (R) SAMUEL J. NICHAMIN

U. S. PUBLIC HEALTH SERVICE

According to the recent mortality records the majority of deaths from pertussis occur in infants. Between 1938 and 1940 inclusive almost 67 per cent of the 10,730 deaths from whooping cough reported in the United States occurred during the first year of life and 47 per cent of these deaths were in infants under 7 months of age (table 1 and fig. 1). The exceptionally high mortality which pertussis exacts in the first half

TABLE 1.—Total Deaths from Pertussis by Age, United States, 1938-1940*

Age	Number (3 Year Total)	Per Cent of Total	Accumulated Percentage
Under 1 month.....	396	3.7	....
1 month.....	1,166	10.9	14.6
2 months.....	1,061	9.9	24.5
3 months.....	791	7.4	31.9
4 months.....	646	6.0	37.9
5 months.....	515	4.8	42.7
6 months.....	502	4.7	47.4
7 months.....	458	4.3	51.7
8 months.....	447	4.2	55.9
9 months.....	417	3.9	59.8
10 months.....	361	3.4	63.2
11 months.....	363	3.4	66.6
1 year.....	2,104	19.6	86.2
2 years.....	668	6.2	92.4
3 years.....	312	2.9	95.3
4 years.....	151	1.4	96.7
5-9 years.....	258	2.4	99.1
10 years and over.....	114	1.1	100.2
Total.....	10,730		

* U. S. Census Bureau mortality statistics.

year of life calls for thorough investigation of the possibility of increasing the resistance of young infants to the disease by immunizing them shortly after birth. This procedure has been objected to chiefly because of the belief that young infants do not possess the ability to develop active immunity. No extensive study has been carried out, however, to establish the earliest age at which immunity to pertussis can be acquired. Sauer¹ recommends immunization after the seventh month of life on the basis of his finding that only 27 per cent of 89 infants developed complement fixing antibodies following immunization with Hemophilus pertussis vaccine given at or below the age of 3 months, whereas over 70 per cent of the infants inoculated at an older age showed positive complement fixation tests. In Sauer's study pertussis occurred seven times more frequently among children inoculated before the third month of life than among those inoculated after the seventh month. However, he did present evidence to indicate that immunization of infants under 3 months of age was of value, since the attack rate in the immunized group

Presented with permission of the Surgeon General, U. S. P. H. S. Drs. C. E. Roach and W. A. Jamieson of Eli Lilly and Company gave helpful criticisms and supplied materials.

From the Department of Pediatrics, Louisiana State University School of Medicine, and the Louisiana State Department of Health.

Read before the Section on Pediatrics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1. Sauer, L. W.: The Age Factor in Active Immunization Against Whooping Cough, Am. J. Path. 17: 719-723 (Sept.) 1941.

was lower than in a similar nonimmunized group and the disease in these infants was mild and none died. Nevertheless, the second half year of life, about 7 months, has generally been accepted as the optimum age for pertussis immunization. Unfortunately, half

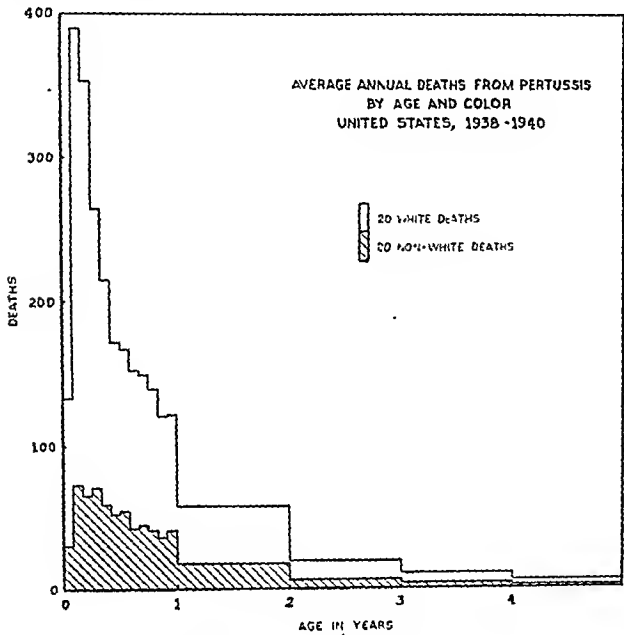


Fig. 1.—Average annual deaths from pertussis by age and color in the United States, 1938-1940.

of the pertussis mortality has materialized before this age is reached.

This paper reports a study conducted over a period of twenty-seven months during which 3,793 infants were inoculated with alum precipitated *Hemophilus pertussis* vaccine according to the recommended dosage of 0.2, 0.3 and 0.5 cc. All of these babies were under 3 months of age, the vast majority under 2 months of

TABLE 2.—Schedule of Immunization

Age	Dose
1-2 months.....	0.2 cc. (first dose)
2-3 months.....	0.3 cc. (second dose)
3-4 months.....	0.5 cc. (third dose)

age, at the time they received their initial inoculation and 1,834 members of the group were followed for varying lengths of time. The study was undertaken primarily to evaluate the incidence and severity of reactions following inoculations of the alum precipitated vaccine and to investigate the young infants' capacity to develop pertussis agglutinins following immunization. The follow-up study provided an opportunity to observe the incidence and severity of pertussis in immunized and nonimmunized infants of comparable age.

MATERIAL AND METHODS

A series of three inoculations of alum precipitated pertussis vaccine containing 40 billion bacilli per cubic centimeter was administered between Jan. 1, 1942 and March 1, 1944 to each of 3,793 young infants (3,377 Negro, 416 white) who were present at 2 to 12 weeks of age at well baby clinics conducted in the city of New Orleans and in several rural centers throughout the state. The immunization was part of a routine in these clinics and was given to all infants whose mothers offered no objection. With but few exceptions the vaccine was injected deeply in the subcutaneous tissues

over the deltoid muscle according to the recommendation of Bell.² In most of the cases, if palpation of the site of injection revealed a lump, the area was gently massaged until the induration was no longer palpable. The schedule followed in performing the immunization is given in table 2.

Observations were made not only on the reactions to these inoculations but also on the subsequent development of agglutinins for *Hemophilus pertussis*. The material for the rapid slide agglutination test was supplied to us by Eli Lilly and Company. The technic for the test has been described by Powell and Jamieson.³ The macroscopic agglutination test was performed according to the method of Miller and Silverberg.⁴ The rocker (fig. 2) used, however, ran at a speed of 20 per minute instead of 11 per minute. The antigen was prepared by Eli Lilly and Company.

LOCAL REACTIONS TO ALUM PRECIPITATED
PERTUSSIS VACCINE

The local reactions observed in the first 2,000 Negro and 200 white infants following 6,600 injections of vaccine are recorded in table 3 (group A), which also

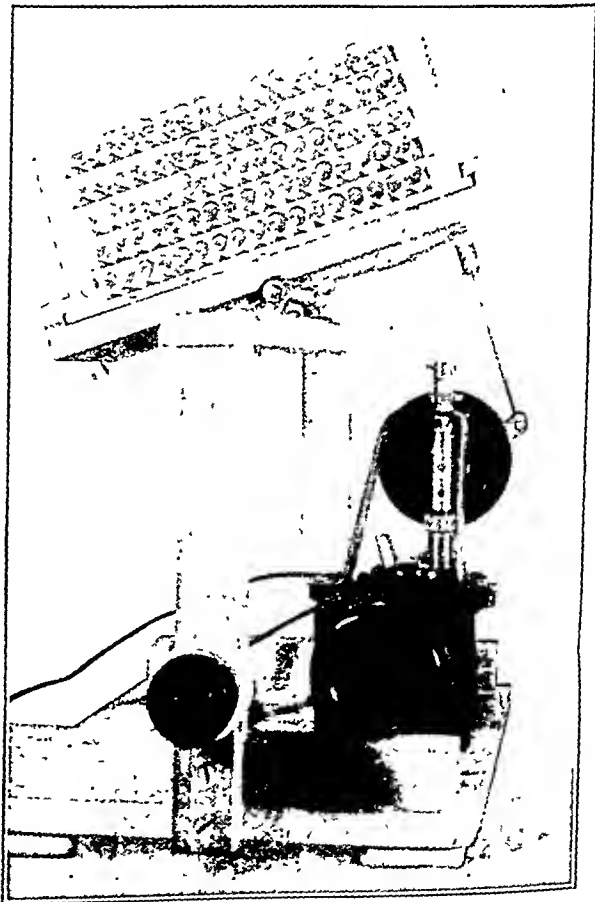


Fig. 2.—Rocker used in the macroscopic agglutination test.

shows the reactions recorded for 703 inoculations received by a separate group of 255 infants (group B). The local reactions were measured by the parents and

2. Bell, J. A.: Pertussis Prophylaxis with Two Doses of Alum Precipitated Vaccine, *Pub. Health Rep.* 56: 1535-1546 (Aug. 1) 1941.
3. Powell, H. M., and Jamieson, W. A.: A Rapid Pertussis Agglutination Test, *J. Immunol.* 42: 13-15 (Jan.) 1942.
4. Miller, J. J., Jr., and Silverberg, R. J.: The Agglutination Reaction in Relation to Pertussis and to Prophylactic Vaccination Against Pertussis with Description of a New Technic, *J. Immunol.* 37: 207-221 (Sept.) 1939.

were classified as mild, moderate and severe, depending on whether their diameters were less than 2.5 cm, between 2.5 and 5 cm, or more than 5 cm, respectively. The fourth category included reactions in which abscess formation occurred. Group B was simply classified as to reactions with or without abscess formation.

The data in table 3 show that 568, or 8.6 per cent, of the 6,600 inoculations administered to group A resulted in appreciable reactions, but only 48, or 0.7 per cent, of these reactions exceeded a moderate degree of severity. Reactions to more than one of the series of three inoculations were exceptional. Forty-nine

(table 4, group A) developed angioneurotic edema of the eyelids and lips associated with anuria of six hours' duration. Two cases of vomiting, diarrhea and convulsions occurred among infants in group B. In 8 infants transient urticarial or miliarial rashes were observed. Following inoculation an occasional infant developed a paroxysmal pertussis-like cough which disappeared in a short time. Slight irritability and disturbed sleep were also reported with appreciable frequency, but since these extremely mild symptoms were very vague they were not classed as caused by pertussis immunization.

TABLE 3—Incidence of Local Reactions Following Inoculations

	Group A *						Group B					
	Number of Inoculations	Reactions				Total	Number of Inoculations	Reactions				Total
		Mild	Moderate	Severe	Abscess			Without Abscess	With Abscess			
First inoculation (0.2 cc.)	2,200	53	16	0	4	73	255	4	6	10		30
Second inoculation (0.3 cc.)	2,200	147	34	3	1	197	255	5	8	13		51
Third inoculation (0.5 cc.)	2,200	220	60	7	21	298	193†	7	9	16		32
Total . . .	6,600	420	100	10	8	568	703	16	23	39		55
Percentage of incidence		(6.4)	(1.5)	(0.2)	(0.6)			(2.3)	(3.3)			

* Forty-nine patients had 2 reactions, usually with the second and third inoculations, 6 patients had reactions with all 3 inoculations.

† No data relative to reactions in 62 cases.

TABLE 4—Incidence of Systemic Reactions Following Inoculations

	Group A *						Group B					
	Number of Inoculations	Reactions				Total	Number of Inoculations	Reactions				Total
		Mild	Moderate	Severe	No			Mild	Moderate	Severe	No	
First inoculation (0.2 cc.)	2,200	77	12	1	90	41	255	24	0	0	24	94
Second inoculation (0.3 cc.)	2,200	117	32	5	154	70	255	37	7	2	46	180
Third inoculation (0.5 cc.)	2,200	161	44	10	223	101	193†	27	9	1	37	102
Total . . .	6,600	363	88	16	467	211	703	88	16	3	107	152
Percentage of incidence		(5.5)	(1.3)	(0.2)				(12.5)	(2.3)	(0.4)		

* Thirty-one patients had 2 reactions, 6 patients had reactions with all 3 inoculations.

† No data relative to reactions in 62 cases.

TABLE 5—Incidence of Local and Systemic Reactions by Color in Group A

	White						Negro					
	Number of Inoculations	Local Reactions		Systemic Reactions		Total	Number of Inoculations	Local Reactions		Systemic Reactions		Total
		No.	%	No.	%			No.	%	No.	%	
First inoculation (0.2 cc.)	200	8	4.0	17	8.5		2,000	65	3.3	77	3.9	
Second inoculation (0.3 cc.)	200	25	12.5	27	13.5		2,000	172	8.6	127	6.4	
Third inoculation (0.5 cc.)	200	24	12.0	30	15.0		2,000	274	13.7	191	9.7	
Total . . .	600	57	9.5	74	12.2		6,000	511	8.5	395	6.6	

patients reacted to two inoculations and 6 patients reacted with each inoculation.

In group B 39, or 5.5 per cent, of the 703 inoculations resulted in appreciable reactions; 23, or 3.3 per cent, led to abscess formation.

SYSTEMIC REACTIONS TO ALUM PRECIPITATED PERTUSSIS VACCINE

Systemic reactions were classed as mild, moderate or severe, depending on whether symptoms persisted less than twenty-four hours and/or were accompanied by a low fever, lasted one to two days and/or moderate fever, or a high fever lasting more than two days, respectively. Unusual constitutional symptoms occurring in 3 infants were also classed as severe. One patient

Systemic reactions followed 467, or 7.1 per cent, of the 6,600 inoculations received by the members of group A (table 4), but only 16, or 3.4 per cent, of these reactions were classed as severe in character. Thirty-one patients reacted to each of 2 inoculations and 6 infants reacted to each inoculation they received. In group B (table 4) 107, or 15.2 per cent, of the 703 inoculations were followed by reactions, of which only 3, or 0.4 per cent, were classed as severe.

The incidence of local and systemic reactions by color is given in table 5. Local reactions occurred with about equal frequency in the two colors, but there is an apparent significant difference in the incidence of systemic reactions, being higher in the white than in the Negro infants.

CORRELATION OF LOCAL AND SYSTEMIC REACTIONS

The local and systemic reactions are correlated in table 6. The table shows that the occurrence of a local reaction was not necessarily associated with a systemic reaction. Two thirds of the systemic reactions accompanied local reactions and slightly over half (54 per

TABLE 6.—Correlation of Local and Systemic Reactions, Group A

	None	Mild	Moderate	Severe	Abscess	Total Local Reactions	Total Observed
None.....	3,872	196	36	1	28	261	6,131
Mild.....	153	151	46	5	8	210	363
Moderate.....	6	62	15	3	2	82	83
Severe.....	1	11	3	1	0	15	16
Total systemic reactions.....	160	224	64	9	10	307	467
Total observed	6,032	420	100	10	38	568	6,600

cent) of the local reactions were associated with systemic reactions. Of the 10 severe local reactions, 6 (60 per cent) were associated with mild or no systemic reaction and only 1 with a severe systemic reaction. Of the 16 severe systemic reactions, 12 (75 per cent) were associated with mild or no local reactions and only 1 with a severe local reaction. Of the 38 abscesses, 28 (74 per cent) were associated with no systemic reaction and 8 (21 per cent) with mild systemic reaction. Not one was accompanied by a severe systemic reaction.

RAPID SLIDE AGGLUTINATION TESTS

Rapid slide agglutination tests were performed on 1,642 Negro and 192 white infants in group A and on 138 infants in group B (table 7) one to four months after completion of the series of inoculations. The table shows that 78.2 per cent of the 1,834 infants in group A gave moderate or strongly positive agglutination tests two to four months after completion of immunization. Of the 138 infants in group B, 112 (81.2 per cent) gave moderate or strongly positive agglutination tests. The discrepancy in the ratio of moderate to strongly positive in the two groups may be due to personal elements involved in interpretation.

TABLE 7.—The Results of Rapid Slide Agglutination Tests After Completion of the Series of Inoculations

Type of Reaction	Group A (2-4 Mos. after Last Inoculation)		Group B (1 Mo. after Last Inoculation)	
	Number	% of Total	Number	% of Total
Strongly positive.....	686	37.4	87	63.1
Moderately positive.....	749	40.8	25	18.1
Negative or doubtful.....	399	21.8	26	18.8
Total.....	1,834	100.0	138	100.0

Rapid slide agglutination tests were repeated in 500 of the Negro infants in group A at monthly intervals following immunization, with the results shown in table 8. The data indicate that the greatest number of infants develop positive agglutination tests three to four months following completion of immunization (75 per cent) and that most of these infants (63 per cent) maintain these positive agglutination titers for at least two years.

COMPARISON OF RAPID SLIDE AGGLUTINATION TEST (QUALITATIVE) AND MACROSCOPIC AGGLUTINATION TEST (QUANTITATIVE)

Rapid slide agglutination tests were compared with the macroscopic agglutination tests in 300 subjects. The results may be summarized as follows: In general, those on whom the rapid test was negative or doubtful were found to have titers of 0 to 1:160 in the macroscopic agglutination test; moderately positive rapid test, 1:160 to 1:640; strongly positive rapid test, 1:640 to 1:5,120.

FOLLOW-UP STUDY

A total of 1,834 infants in group A (1,642 Negro, 192 white) and 1,965 nonimmunized infants were closely followed for twelve to twenty-seven months. The rapid slide agglutination tests were performed two to four months after completion of immunization and prior to exposure. The results are summarized in table 9.

SUMMARY AND COMMENT

It has been well established that Hemophilus pertussis vaccine is of value in the modification and prevention of whooping cough. Bell² demonstrated the value of alum precipitated vaccine given in two doses representing a total of 20 billion organisms. Similar results have

TABLE 8.—Results of Repeated Rapid Slide Agglutination Tests in 500 Negro Infants in Group A

After Completion of Immunization	Moderately Positive	Strongly Positive	Total Positive	Percentage Positive
1 month.....	96	201	297	59.4
2 months.....	145	190	334	66.8
3 months.....	139	213	352	70.4
4 months.....	161	215	376	75.6
6 months.....	158	205	363	72.6
8 months.....	160	201	361	72.2
10 months.....	179	184	363	72.6
12 months.....	165	187	352	70.4
18 months.....	171	157	328	65.6
24 months.....	189	126	315	63.0

been obtained by Kendrick.⁵ The present study was not planned to evaluate a particular vaccine, nor was it intended as a well controlled study of the prophylactic value of the material. It was primarily intended to study (1) the reaction of young infants 3 months of age or younger to parenteral injection of the alum precipitated vaccine and (2) the antibody response, as measured by agglutination tests, of these young infants so inoculated. Data were collected which show that young infants tolerated the inoculations extremely well; 568 (8.6 per cent) of the 6,600 injections in group A were followed by local reactions, 38 (0.6 per cent) by abscesses. Of the 703 injections in group B, 39 (5.5 per cent) were followed by local reactions, 23 (3.3 per cent) by abscesses. These abscesses were all sterile and usually were not associated with a febrile reaction or discomfort; all of them drained spontaneously or disappeared in one or two months. Not one was incised. Very rarely did their presence occasion alarm in the parents. In fact, the abscesses were usually discovered by us. The vast majority of local reactions in group A were mild (74 per cent), characterized by local redness and induration up to 2.5 cm. in diameter. Only 10 (1.8 per cent) were severe, characterized by induration and redness greater than 5 cm. in diameter.

5. Kendrick, Pearl L.: Use of Alum Treated Pertussis Vaccine and of Alum Precipitated Combined Pertussis Vaccine and Diphtheria Toxoid for Active Immunization, *Am. J. Pub. Health* 32: 615-626 (June) 1942.

Local reactions occurred much more frequently following the second and third injections than following the first. There was no appreciable difference in the rate of occurrence of local reactions between white and Negro infants. It was incidentally observed that these young infants tolerated the inoculations much better than did older infants and children, although no attempt has been made in this study to compare the reactions in different age groups.

Systemic reactions were reported following 467 (7.1 per cent) of the 6,600 inoculations in group A. Of this total 16 (3.4 per cent) were classified as severe and 363 (77.5 per cent) as mild. Of the 703 injections in group B 107 (5.2 per cent) were followed by systemic reactions. Of these 3 (2.8 per cent) were classified

TABLE 9.—Incidence and Severity of Pertussis in Immunized and Nonimmunized Groups

I. Intimate Familial Exposures	
1,612 immunized Negro infants	102 immunized white infants
141 exposed in family	18 exposed in family
27 contracted pertussis (19.1%)	3 contracted pertussis (16.7%)
25 mild pertussis	All mild
Rapid slide agglutination test:	Rapid slide agglutination test:
Strongly positive..... 0	Strongly positive..... 0
Moderately positive..... 9	Moderately positive..... 1
Negative.....16	Negative..... 2
2 average severity	
Negative test..... 2	
No deaths	No deaths
1,753 nonimmunized Negro infants	212 nonimmunized white infants
135 exposed in family	14 exposed in family
118 contracted pertussis (87.4%)	9 contracted pertussis (64.3%)
Mild..... 4	
Average severity.....69	
Pneumonia treated success- fully.....12	fully..... 1
Deaths.....12	Deaths..... 1
II. Casual Exposures in Clinics, with Neighbor and Other Children	
1,642 immunized Negro infants	103 immunized white infants
128 exposed	25 exposed
7 contracted pertussis (5.5%)	1 contracted pertussis (4%)
Mild pertussis..... 6	Negative test..... 1
Rapid slide agglutination test:	
Strongly positive..... 0	
Moderately positive..... 1	
Negative..... 5	
Average severity..... 1	
Negative test..... 1	
1,753 nonimmunized Negro infants	212 nonimmunized white infants
149 exposed	16 exposed
39 contracted pertussis (16.6%)	3 contracted pertussis (18.8%)
Mild..... 2	Average severity..... 3
Average severity.....24	
Pneumonia treated success- fully.....11	
Deaths..... 2	

as severe and 88 (82.2 per cent) as mild. The criteria used in the classification of systemic reactions were (1) the presence of fever, the degree and duration of which determined the class of reaction, and (2) other constitutional symptoms which were not invariably present. There were 3 instances of quite severe illness following inoculation. These are counted as reactions, though it would be difficult to prove a causal relationship.

A peculiar paroxysmal cough resembling that of pertussis occurred with sufficient frequency to be noted here as related to the inoculation. It began shortly after injection and disappeared rapidly.

Data on the immunologic response of these young infants as measured by agglutination tests also were collected. It is appreciated that the agglutination test with *Hemophilus pertussis* is not an absolute measure of immunity. However, it is accepted as an indication

of immunologic response. The Rapid Agglutination Test (Lilly), a qualitative test, was used throughout the study. The reliability of this test was checked in 300 cases against the macroscopic agglutination test of Miller and Silverberg.⁴ The correlation between the two was remarkable. It is our opinion that the so-called "weak positive" reaction described by Powell and Jamieson³ would more accurately be referred to as "moderately positive" and the doubtful reactions are best considered as negative. Also we concur in the finding that the reaction following vigorous mixing of the antigen with the blood and the delayed reaction after one minute are unreliable.

The greatest proportion of positive reactions was found between the third and the fourth month after completion of the series of inoculations. The effect apparently is a lasting one, since 63 per cent of the individuals tested twenty-four months after completion gave positive reactions. The fact that 75 per cent of these very young infants exhibited antibody response as measured by the agglutination tests used is evidence of the value of immunization early in infancy. This is contrary to the popular belief that young infants are unable to elaborate antibodies following active immunization, and the question of early immunization against pertussis should be reopened for consideration by the profession.

While it was not intended to conduct a well controlled study of the incidence of the disease following immunization, some attempt was made to follow the infants subsequent to immunization. The incidence in those followed who had known exposure, familial or casual, was compared to that in a similar group of nonimmunized urban clinic patients. The results of these observations, though small in number, further suggest that early protection against whooping cough is practicable.

NOTE.—Since this article was submitted for publication, a personal communication from Sauer stimulated us to make a study of the factors which influence abscess formation. Our findings on the basis of over 6,000 inoculations are as follows:

1. Directing the needle downward as recommended by Sauer or upward as usually done did not influence the incidence of abscess formation.

2. Deep subcutaneous or intramuscular inoculations gave a much lower incidence of abscess formation than superficial inoculations.

3. The greatest factor in abscess formation was found to be the intracutaneous introduction of the alum precipitated vaccine. The physician or nurse after transferring the vaccine into a syringe customarily evacuates the air from the syringe and in so doing covers the outside of the needle with the vaccine. This vaccine, which is introduced into the skin during inoculation, sets up an acute inflammation of the skin which soon involves the subcutaneous tissues and leads to abscess formation. The physicians are therefore advised to use a separate needle for injection. In clinic practice it has been found most convenient to leave one needle in the vaccine bottle to transfer the material and to attach a separate dry sterile needle for each inoculation. Since this procedure has been followed, more than a thousand inoculations have been given without a single abscess forming.

ABSTRACT OF DISCUSSION

DR. LOUIS W. SAUER, Evanston, Ill.: United States vital statistics show a sharply accelerated decrease in pertussis morbidity and mortality. Ten years ago the average was 300,000 cases with 6,000 deaths (50 cases to a death); in 1942, 191,383 cases with 2,536 deaths (75 cases to a death). Seventy per cent of 1942 deaths were during the first year of life, three fourths of these during the first seven months, i. e. before the age recommended for pertussis immunization. What remains of the pertussis problem is to prevent pertussis during the early part of the first year of life. The excellent results reported by Drs. Sako, Treuting, Witt and Nichamin augur well. I recommended the four week or monthly interval between the three doses of vaccine several years ago because the same total dose yielded a higher antibody response than did the weekly interval. The authors preferred the four month interval between the last dose and the rapid slide agglutination test, yet in table 6, group B, there were 63 per cent strongly positive tests at one month, and only 37 per cent strongly positive in group A four months later. They attribute this difference to "personal elements in interpretation." I tried out the method as Daughtry-Denmark had suggested (at six weeks) in several hundred infants. I too found some difficulty in interpreting results. I prefer the 3+ and the 4+ complement fixation test as an index of pertussis immunity in investigative work. The authors' observation period for the follow-up study was twenty-six months, probably an average of about one year per infant. Nineteen per cent of 141 injected Negro children and 16.7 per cent of 18 injected white children have already developed pertussis. However, the gratifying and indisputable evidence of amelioration is that no death occurred in the vaccinated, with thirteen deaths among the nonvaccinated (controls). I found it difficult to confer prolonged protection against whooping cough (also against diphtheria) in infants injected during early life. Only 3 per cent of mine injected with plain vaccine, 8 per cent of those injected intracutaneously and 16 per cent of alum precipitated injections showed adequate protection (3+ or 4+ complement fixation). In infants over 7 months old 76 per cent of those injected with plain vaccine and 88 per cent of those injected with an alum precipitated vaccine showed adequate antibodies. Mixed diphtheria toxoid and pertussis vaccine ("combined" immunization) has gained in favor rapidly. Three injections, a month apart, protect against the two diseases simultaneously. Schick still recommends the ninth month as the optimum age for prolonged diphtheria immunization. Mixed diphtheria and pertussis antigens should not be given, therefore, as early as recommended by Drs. Sako, Treuting, Witt and Nichamin. Nothing is known as yet on the duration of immunity conferred so early in life. If more transient, pertussis revaccination might be done later, perhaps at nine months, by three injections monthly of mixed diphtheria toxoid and pertussis vaccine. Already a routine "stimulating" dose of diphtheria toxoid at school age or earlier is obligatory in some cities. Before a radical change in immunization procedure is undertaken, it should be borne in mind that the young infant who develops whooping cough usually contracts it from an unprotected older sibling. Although the most pertussis deaths occur during the first year, the disease is far more prevalent during early childhood. During the first months some infants are feeding problems, others are prematurely born. Local reactions to alum precipitated antigens may be severe. The authors reported occasional abscesses. Severe local reactions in private practice and in municipal clinics have deterred many physicians from using any alum precipitated antigens. Miller and others recommend agents less irritating than alum. Pertussis vaccine should be injected at the earliest age at which adequate immunity can be conferred.

DR. WALLACE S. SAKO, New Orleans: The difference in the interpretation of the moderately and strongly positive reactions I attributed to personal elements because in several instances it was difficult to draw a dividing line between the two reactions. When it comes to taking the two reactions together and adding them, in one group the positive reaction occurred in 78 per cent and in the other group in 82 per cent. We do not

contend that the agglutination test is an absolute measure of immunity. However, it is generally accepted as a measure of immunologic response. Regardless of the agglutination test or the complement fixation test in these young immunized infants, the fact remains that the disease when contracted is milder and the mortality is lowered. In both Dr. Sauer's series and in ours the significant thing is that there were no deaths in the immunized group, and the disease when contracted was mild. Abscesses occurred in a small number of infants, but they occasioned no alarm. The majority of them gave no systemic reactions whatever. The routine immunization of young infants, therefore, is recommended because of the low incidence of both local and systemic reactions. Although the few local abscesses which may occur might occasion some objection from the parents in private practice, it is significant that none of our parents discontinued immunization because of them. The state of Louisiana since 1942 has adopted the immunization routine outlined as a regular program in the well baby clinics conducted throughout the state. To date more than 16,000 infants below the age of 2 months have been so immunized. It is significant also that the mortality figures for the state of Louisiana since 1942 showed no deaths reported from the immunized group. This study was conducted as a joint project between the Louisiana State University School of Medicine and the Louisiana State Department of Health.

SIGNS AND SYMPTOMS OF IMPENDING CEREBRAL HEMORRHAGE

R. D. TAYLOR, M.D.

AND

IRVINE H. PAGE, M.D.

INDIANAPOLIS

Symptoms referable to the nervous system which precede the onset of cerebral hemorrhage and the association of apoplexy with necropsy evidence of left ventricular hypertrophy have been recognized since the times of Galen and Morgagni.¹ Lidell² in 1873 described in detail transient paresthesia, aphasia, temporary motor paralysis, vertigo and syncope, memory defects and blind spots, as frequent prodromes of fatal apoplexy. When arterial hypertension was recognized, it soon became apparent that the vast majority of such accidents were due to this disease (Lippman³ and Baer⁴), and most contemporary discussions of essential hypertension⁵ mention that signs and symptoms of impaired cerebral circulation can be the forerunners of cerebral hemorrhage. However, possibly because they have been erroneously considered to be manifestations of the comparatively benign hypertensive encephalopathy described by Fishberg and Oppenheimer,⁶ the value of these findings seems to have been generally lost sight of, so that there is at present no accurate method of predicting which patient with essential hypertension is likely to have a stroke. Such a means of prognostic selection might be of value in protecting those apt to

From the Lilly Laboratory for Clinical Research, Indianapolis City Hospital.

1. Morgagni, G. B.: Seats and Causes of Diseases Investigated by Anatomy, Translated from Latin by Benjamin Alexander, M.D. (1769), M. Classics 4: 640, 1940.

2. Lidell, J. A.: A Treatise on Apoplexy, New York, William Wood & Co., 1873.

3. Lippman, A.: Apoplexie Encephalomalacie und Blutdruck, Deutsche med. Wchnschr. 44: 907, 1918.

4. Baer, H.: Apoplexie und Hypertonie, Frankfurt. Ztschr. f. Path. 30: 128, 1924.

5. Fishberg, A. M.: Hypertension and Nephritis, Philadelphia, Lea & Febiger, 1939. Osler, W.: Principles and Practice of Medicine, edited by H. A. Christian, New York, D. Appleton Century Company, Inc., 1944. Goodridge, Malcolm, in Cecil, R. L.: Text Book of Medicine, Philadelphia, W. B. Saunders Company, 1943. Goldring, W., and Chasis, Herbert W.: Hypertension and Hypertensive Disease, New York Commonwealth Fund, 1944.

6. Oppenheimer, B. S., and Fishberg, A. M.: Hypertensive Encephalopathy, Arch. Int. Med. 41: 264 (Feb.) 1926.

die of apoplexy, and, what is more important, it would offer assurance and comfort to those who probably will not.

The present communication is an analysis of the records of patients who died with, or of, essential hypertension, in which an attempt is made to determine whether or not there are enough points of similarity among those who had cerebral hemorrhage to define an antecedent syndrome that segregates this group (group H) of patients from other patients with essential hypertension (group C).

METHODS OF STUDY

Selection of Cases.—Forty patients who died of essential hypertension were studied in the past three years. The diagnosis of essential hypertension was established by demonstrating arterial hypertension, electrocardiographic or teleoroentgenographic evidence of hypertensive heart disease, renal hemodynamic changes consistent with essential hypertension and the presence of hypertensive retinopathy. The retinopathy included constriction and sclerosis of the retinal arterioles and retinal hemorrhages in the absence of papilledema and exudates. When either or both of the last two findings were present, the disease was considered malignant (Keith, Wagener and Kernohan⁷) and was excluded from this series. Also excluded was that group who showed no evidence of advancing blood vessel disease or renal changes consistent with essential hypertension and have been designated elsewhere as "neurogenic" (Corcoran, Taylor, Shrader, Young and Page⁸).

METHOD OF GRADING RETINOPATHY

Each component of the hypertensive retinopathy was graded on a 1 to 4 basis. Grade 1 constriction was recorded when, in the absence of sclerosis, the diameter ratio of arteriole to venule (arteriovenous ratio) was at all reduced below the normal 4 to 5, or, when slight, local vasospasm was visible. Grade 2 constriction indicated a reduction of the vessel size ratio to 3 to 5, or definite sausage-like, segmental vasospasm and straightening of the graceful curves of the normal retinal arterioles. Grade 3 constriction was thought to be present if, in addition to the foregoing findings, the arterioles were so constricted and shortened that they seemed not to extend into the periphery of the fundus. The small distal arteriolar segments were not visible. Grade 4 was reserved for those vessels that seemed to be straight reddish lines coursing through the retina and whose size relation to the veins was 2 to 5 or less. Such severe constriction, in the absence of sclerosis, probably rarely occurs in essential hypertension; however, when present, it can account for slight venous compression.

Beginning or grade 1 sclerosis indicated visible "hardening" of the rich, soft, plushlike red color of normal retinal arterioles. The velvety coat that seems to surround healthy vessels was gone. Grade 2 described the presence of early perivascular reaction as evidenced by fuzzy, dull, red areas along the arterioles. At this stage the retinal veins occasionally showed slight compression as they passed under arterioles. Grade 3 sclerosis was thought to be present if the arteriovenous ratio was reduced to 3 to 5 and the retina immediately

adjacent to the arterioles was of a hard, whitish appearance. Grade 4 was reached when the retinal veins were severely compressed as they passed under arterioles and the arterioles themselves were reduced in size to a 1 to 2 arteriovenous ratio. The adjacent retina seems to sheath them like stockings. The light reflex from these vessels has been compared to a silver wire.

The gradation of retinal hemorrhages represented the sum of such lesions in both eyes. Grade 1 indicated the presence of one to three hemorrhages, grade 2 four to six hemorrhages, grade 3 six to ten hemorrhages and grade 4 more than ten. In some fundi, whitish areas were present that somewhat resembled the exudates of malignant retinopathy. However, these white areas were harder and more sharply demarcated. Over a period of months one could occasionally observe such lesions develop as hemorrhagic exudate was absorbed. Five cases in this series gave such findings.

METHODS OF COLLECTING CLINICAL DATA

The average blood pressures obtained from weekly averages of twice daily readings taken during bed rest were recorded. The duration of hypertension was estimated, as with all patients in this clinic, from previous blood pressure measurements. Employers, insurance companies, hospitals, schools and physicians have all been cooperative in providing these values; thus in most cases the beginnings of the disease could be dated. The onset of symptoms heralding the mode of death was dated, retrospectively, from the first sign suggesting the ultimate fatal illness.

The clinical signs and symptoms considered dealt only with evidence of damaged cerebral circulation or of hemorrhagic tendencies, such as nosebleed, and gastrointestinal hemorrhage. Evidences of concurrent disease of the heart or kidneys were disregarded except as they delimited the nature of the hypertensive state.

All complaints were graded on a 1 to 4 basis, where grade 1 indicates the mere presence of a symptom and grade 4 constant or incapacitating proportions. The symptoms ascribed to abnormal cerebral circulation were headache, vertigo, syncope, paresthesia, temporary paralysis or paresis, aphasia, amnesia or visual disturbances.

The type and location of headaches were given special attention. Vertigo was recorded only when the world seemed to turn about the patient. Simple dizziness and lightheadedness were not considered. Syncope included temporary "blackouts" and complete loss of consciousness. Paresthesia was used to indicate all abnormal sensations from numbness and tingling of any part of the body to areas of complete anesthesia. Transient paralyzes ran the gamut from weakness of a limb or finger to hemiplegia lasting twelve to thirty-six hours. Motor aphasia and oculomotor disturbances were also listed under this heading.

The cause of death was established by postmortem examination in 18 of 40 cases, by clinical observation and the demonstration of grossly bloody spinal fluid in 9 others, by surgical exploration in 1 and by unequivocal clinical and laboratory findings in the remaining 12.

RESULTS

Cause of Death.—Among the 40 patients with essential hypertension 19, or 47.5 per cent, died of cerebral hemorrhage; 10, or 25 per cent, of congestive heart failure; 4, or 10 per cent, of coronary occlusion with myocardial infarction; 2, or 5 per cent, of renal failure. The remaining 5 patients (12.5 per cent) died of causes

7. Keith, N. M., Wagener, H. P., and Kernohan, J. W.: Syndrome of Malignant Hypertension, *Arch. Int. Med.* 41: 141 (Feb.) 1928.
8. Corcoran, A. C., Taylor, R. D., Shrader, J. C., Young, W. C., and Page, I. H.: Correlation of Clinical Types with Renal Function in Arterial Hypertension, *Proc. Central Soc. Clin. Research* 15: 72, 1942.

other than hypertension, namely carcinoma of the pancreas, pulmonary tuberculosis with Addison's disease, tuberculous peritonitis, dissecting aortic aneurysm and an undetermined cause (tables 1 and 2).

The average age in group H (for hemorrhage) was 46.8 years and 50.3 years in the other.

Duration of Hypertension.—The duration of hypertension was established as accurately as possible by exploring every source for earlier blood pressure measurements. The courses of those who died of cerebral hemorrhage were shorter than those of the others. The

on a 1 to 4 basis, while the mean of the others was less than one half this, or 1.1. Only 1 patient who died of causes other than cerebral hemorrhage had nuchal headache of more than grade 1 severity (patient S. L., table 4). The cause of her death could not be established at autopsy, but there was reason to believe that it may have been barbiturate poisoning.

Vertigo and Syncope.—One or both of these symptoms were present in 18 of 19 patients with cerebral hemorrhage, and the average severity was 2.3. Only 4 of the other group offered this as a complaint. In

TABLE 1—Patients Who Died of Cerebral Hemorrhage (Group H)

Patient	Sex	Age	Total Duration of Hypertension, Years	Arterial Blood Pressure, Mm. Hg (Average)	Ocular Fundi			Duration of Disease After First Sign of Mode of Death, Yrs.	Cause of Death	Proved By
					Arteriolar Constriction	Arteriolar Sclerosis	Retinal Hemorrhages			
L. W.	♀	50	6	200/120	+, +, +	+, +, +	+	2.5	Cerebral hemorrhage	Lumbar puncture
M. Z.	♂	46	8	230/120	+, +	+, +	+	1.5	Cerebral hemorrhage	Lumbar puncture
S. M.	♀	45	12.5	260/140	+, +	+, +	+	5.0	Cerebral hemorrhage	Lumbar puncture
D. M.	♂	53	9	180/120	+, +, +	+, +, +	+	1.0	Cerebral hemorrhage	Lumbar puncture
H. M.	♂	60	4	200/120	+, +	+, +	+	1.75	Cerebral hemorrhage	Autopsy
P. R.	♂	26	4	180/110	+, +	+, +	+, +, +	1.0	Cerebral hemorrhage	Autopsy
R. S.	♂	56	8	200/120	+, +	+, +, +	+, +	2.0	Cerebral hemorrhage	Autopsy
V. F.	♀	53	5	210/130	+, +, +, +	+, +, +, +	+, +	2.0	Cerebral hemorrhage	Lumbar puncture
J. F.	♂	60	6	210/120	+, +, +	+, +, +	+, +	3.0	Cerebral hemorrhage	Autopsy
K. G.	♂	31	4	200/130	+, +, +	+, +, +	+, +	2.0	Cerebral hemorrhage	Autopsy
R. G.	♂	37	8	230/135	+, +	+, +	+	1.0	Cerebral hemorrhage	Lumbar puncture
H. G.	♂	51	11	220/140	+, +, +	+, +, +	+, +, +	3.0	Cerebral hemorrhage	Lumbar puncture
W. J.	♂	49	10	230/120	+, +	+, +	+	1.5	Cerebral hemorrhage	Clinical findings
H. B.	♂	37	4	210/125	+, +	+, +	+	3.0	Cerebral hemorrhage	Clinical findings
C. B.	♂	57	10	100/110	+, +, +, +	+, +, +, +	+, +	3.0	Cerebral hemorrhage	Autopsy
S. B.	♂	46	4	180/100	+, +	+, +	+	0.8	Cerebral hemorrhage	Lumbar puncture
F. B.	♂	38	8	240/140	+, +, +	+, +	+	1.0	Cerebral hemorrhage	Clinical findings
M. M.	♂	38	6	220/130	+, +, +	+, +	+	1.6	Cerebral hemorrhage	Clinical findings
F. G.	♀	46	6	230/130	+, +, +	+, +	+	3.5	Cerebral hemorrhage	Clinical findings
Average		46.8	7	210/124	2.6	2.4	1.4	2.1		

TABLE 2—Patients Who Died of Other Causes (Group C)

Patient	Sex	Age	Total Duration of Hypertension, Years	Average Arterial Blood Pressure, Mm. Hg	Ocular Fundi			Duration of Disease After First Sign of Mode of Death, Yrs.	Cause of Death	Proved By
					Arteriolar Constriction	Arteriolar Sclerosis	Retinal Hemorrhages			
H. B.	♂	63	9	190/100	+	+, +	..	4.0	Congestive heart failure	Autopsy
B. T.	♂	49	9	250/150	+, +	+, +	+, +	5.0	Congestive heart failure	Clinical and laboratory findings
H. W.	♂	47	12	216/126	+, +, +	+, +, +	+	1.0	Congestive heart failure	Clinical and laboratory findings
C. R.	♂	51	6	214/114	+, +, +	+, +	..	0.8	Renal failure	Autopsy
E. R.	♂	62	9	180/90	+	+	..	2.0	Pulmonary tuberculosis and Addison's disease	Autopsy
G. M.	♂	43	9	160/120	+	+	..	4.0	Congestive heart failure	Autopsy
O. O.	♂	63	4	230/140	+, +, +	+, +, +, +	..	0.5	Renal failure	Autopsy
M. R.	♂	56	8	170/110	+, +	+, +	..	1.0	Carcinoma of pancreas	Exploratory laparotomy
L. S.	♂	45	4	170/100	+	+	..	2.0	Congestive heart failure	Autopsy
G. B.	♂	46	15	190/116	+, +	+, +	..	5.0	Congestive heart failure	Autopsy
F. B.	♂	40	10	170/110	+, +	+, +	..	0.6	Tuberculous peritonitis	Autopsy
C. B.	♂	47	8	210/130	+, +	+	..	2.0	Congestive heart failure	Clinical and laboratory findings
M. B.	♂	44	7	220/130	+, +	+, +	..	0.0	Coronary occlusion	Clinical and laboratory findings
C. B.	♂	45	4	160/106	+, +	+, +	..	0.0	Coronary occlusion	Clinical and laboratory findings
H. K.	♂	49	16	166/106	+, +	+, +	..	0.0	Coronary occlusion	Clinical and laboratory findings
L. K.	♂	41	8	150/116	+	+	..	2.5	Congestive heart failure	Clinical and laboratory findings
R. H.	♂	53	12	200/86	+, +	+, +	..	3.5	Coronary occlusion	Clinical and laboratory findings
I. G.	♂	48	8	220/140	+	+	..	2.0	Congestive heart failure	Autopsy
E. F.	♂	53	6	200/126	+, +, +	+, +, +	..	0.0	Dissecting aortic aneurysm	Autopsy
S. L.	♂	44	5	230/135	+, +, +	+, +, +	+	0.0	Undetermined	Autopsy
E. T.	♂	53	19	220/120	+, +, +	+, +, +	+, +	6.0	Congestive heart failure; pancreatitis	Autopsy
Average		50.3	9.95	193/117	1.9	1.9	..	2.6		

mean duration of group H was 7.0 years (range 4 to 12.5) and, of the other, 9.0 years (range 4 to 19) (tables 1 and 2).

SIGNS AND SYMPTOMS PRECEDING DEATH

Headache.—These observations are summarized in tables 3 and 4. Although headache was only slightly more common among those who died of cerebral hemorrhage (18 of 19 as compared to 16 of 21), the type of headache and the severity showed wide differences. Twelve of those who developed apoplexy previously complained of nuchal and occipital pain, without headache in other regions, while only 5 of the controls mentioned distress of this type. Further, the severity of headache in group H had a mean severity grade of 2.5

3 of these it was of a grade 1 variety, while the fourth complained of grade 2 vertigo. She again is the S. L. referred to in the preceding paragraph.

Paresthesias or Transient Paralysis, Aphasia, Convulsive Seizures.—At some time during their illness, 17 of the 19 persons who eventually had apoplexy gave evidence of temporary cerebral circulatory insufficiency. These complaints ranged from recurrent numbness and tingling of the fingers or face to convulsive seizures and hemiplegia lasting two to thirty-six hours. Other variations of this group of symptoms were diplopia of three days' duration following an attack of ataxia, temporary and permanent loss of a quadrant or entire visual field, transient aphasia and amnesia, and permanent muscle weakness or sensory defect which were attributed to

small thrombi. One or more of these manifestations were noted alternately on the left or right side or bilaterally by 10 of those 17 patients who had neurologic symptoms. Five experienced right sided disturbances, while in 2 cases the left side of the body was involved. This lateralization had no relation to the cerebral hemisphere involved in the fatal attack (table 5). The mean severity grade of these findings was 2.0, where grade 1 indicates the presence of a symptom and grade 4 incapacitating proportions. The duration of life from the appearance of the first neurologic sign averaged 1.5 years (0.25 to five years), six months shorter than the mean span of life dated from any other complaint common to group H.

In sharp contrast to this picture, but 2 of the 21 patients in the other group even mentioned numbness, and this amounted to very slight tingling of one or two fingers, occurring but once in each.

Nosebleed.—The difference between the two groups as regards hemorrhage from the nose was less evident. Nine of those who died of cerebral hemorrhage reported

TABLE 3.—*Signs and Symptoms of Impaired Cerebral Circulation and Hemorrhage Among Patients with Essential Hypertension Dying of Cerebral Hemorrhage (Group H)*

Patient	Headache	Vertigo or Syncope	Paresthesias or Transient Paralysis	Retinal Hemorrhage	Nosebleed
E. W.	++++	+	+++	+	..
M. Z.	++++	+++	++	+	+
S. M.	++	++	+++	+	..
D. M.	+	+	+	++	..
H. M.	++++	+	..	+++	++
P. R.	+++	+++	+	++	++
R. S.	++	++++	+	++	..
V. F.	++	++	+++	+	+
J. F.	+++	++	++++	+	+
K. G.	++++	+++	+++	+	+
H. G.	++++	+++	++	+	+
H. G.	++++	+++	+++	+++	..
W. J.	+++	++	+	+	+
H. B.	++	+++	+	+	+
C. B.	+	++	+++	++	++++
S. B.	++	..	+	+	+
F. B.	+++	+++	+++	..	+
M. M.	++	+++	..	+	+
F. G.	+++	+	+++	+	..
Average.....	2.5	2.3	2.0	1.4	0.8

nosebleeds. Five of the 21 other patients experienced nosebleeds. These were comparatively less frequent and severe.

Arterial Blood Pressure.—The arterial blood pressures of those patients who had strokes were only slightly higher than those in group C. The mean of the blood pressures in group H was 210/124 mm. of mercury (the range was 180/100 to 260/140 mm. of mercury) and the mean of group C 196/117, with a range of 160/106 to 250/150.

Optic Fundi and Retinal Arterioles (tables 1, 2, 3 and 4).—The examination of the optic fundi aided in segregating those who later developed apoplexy. The degree of constriction and sclerosis of the retinal arterioles was greater among those patients. The vasoconstriction had a mean grade of 2.6 (range 2 to 4) and arteriosclerosis a mean of 2.4 (range 2 to 4) as compared to the patients of group C, in whom both constriction and sclerosis averaged 1.9 (range 1 to 3). These differences, apparent in average values, overlapped in individual cases so as not to aid in prognosis.

The important factor of fundoscopic differentiation lay in the observation of retinal hemorrhages. All but 3 of the 19 subjects with cerebral hemorrhage

(group H) had retinal hemorrhages or scars of old hemorrhages, while only 2 of the other group developed these lesions, and in 1 of these, E. T., tables 2 and 4, the hemorrhages were of the large subretinal type often seen in patients with senile changes in the retina. The hemorrhages that were seen were usually few in num-

TABLE 4.—*Signs and Symptoms of Impaired Cerebral Circulation and Hemorrhage Among Patients with Essential Hypertension Dying of Other Causes (Group C)*

Patient	Headache	Vertigo or Syncope	Paresthesias or Transient Paralysis	Retinal Hemorrhage	Nosebleed
H. B.	+	..	..	..	..
B. T.	+	..	..	++	+
H. W.	+	..	..	..	..
C. R.	+	..	..	..	..
E. R.	+	..	..	..	..
G. M.	+	..	..	..	..
O. O.	++	+	..	..	..
M. R.	..	..	..	..	..
L. S.	..	..	..	..	+
G. B.	+	..	..	..	..
F. B.	+	+	+	..	..
C. B.	+	..	..	..	+
M. B.	+	..	..	..	..
E. B.	+	..	..	..	..
H. K.	..	..	+	..	..
L. K.	+++	..	..	..	..
R. H.	..	..	..	..	..
L. G.	..	..	..	..	..
G. F.	++++	+	..	..	..
S. L.	+++	++	..	..	+
E. T.	++	..	..	++	..
Average.....	1.1	..	..	..	..

ber, with a mean grade of 1.41, or approximately two hemorrhages in each eye. When such lesions were in close association with blood vessels, they were smaller, harder and more linear than the soft, flame shaped hemorrhages of malignant hypertensive retinopathy. In addition to this type of hemorrhage, a droplike spot of bleeding was often observed some distance from an arteriole.

Length of Life After First Suggestion of Mode of Death (tables 1 and 2).—In estimating the duration of life from the first prodrome of the subsequent cause of

TABLE 5.—*Laterality and Duration of Neurologic Symptoms*

Patient	Right	Left	Alternate	Bilateral	Transient	Permanent	Duration of Life from First Symptom, Years
E. W.	+	..	..	..	+	+	2.75
M. Z.	+	..	..	..	+	..	0.5
S. M.	..	+	+	..	+	..	5.0
D. M.	..	..	+	+	+	..	1.0
P. R.	..	..	+	..	+	..	1.0
R. S.	..	..	..	+	+	+	1.2
V. F.	..	+	..	..	+	+	1.1
J. F.	..	..	+	..	+	..	1.1
K. G.	..	..	+	..	+	+	0.7
R. G.	..	..	..	+	+	..	0.5
H. G.	..	..	+	..	+	..	0.7
W. J.	..	..	..	+	+	..	1.5
H. B.	..	..	..	+	+	..	0.5
C. B.	+	..	..	..	+	+	0.8
S. B.	+	..	..	..	+	..	1.3
F. B.	..	+	..	..	+	..	0.8
F. G.	+	..	..	..	+	..	0.25
Total	5	2	5	5	14	5	Mean 1.5

death, the earliest suggestion of heart failure, renal failure or other terminal illness was chosen. Among those who died of cerebral hemorrhage the duration of the fatal illness was dated from the appearance of the signs or symptoms we have considered. The 5 patients in group C who died of coronary occlusion and dissecting aneurysm were omitted from the calculation because they gave no sign that might have suggested such an accident.

Those who died of cerebral hemorrhage lived an average of 2.1 years (0.8 to five years) and the others 2.6 years (0.6 to six years) after the first symptom of the ultimate cause of death. The accompanying charts compare the average clinical picture of these two groups of patients.

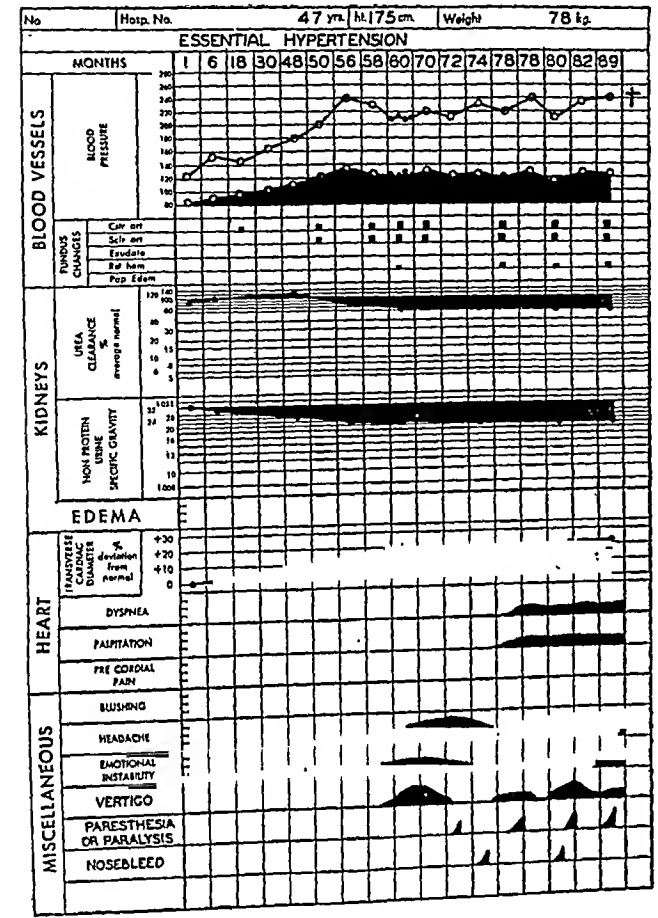


Chart 1.—Average clinical course in group H.

COMMENT

The tragic abruptness with which cerebral hemorrhage ends the lives of comparatively young persons (average age of this group 46.8 years) led us to a search for methods whereby the event might be anticipated. Studies of the heart and kidney can provide, with satisfying accuracy, estimates of the state of coronary and renal vessels, but there are no present means for comparable analyses of the cerebral circulation, and we are left with clinical findings as the only guides to the integrity of this important vascular bed. Our data indicate that clinical study of individuals with essential hypertension may draw a picture peculiar to those patients who are likely to have apoplexy.

Patients in this series who died of cerebral hemorrhage presented concurrent findings that were uncommon among other essential hypertensives. Exhaustive investigation of individual medical histories indicated that the average length of disease among those who had apoplexy was 20 per cent shorter than those dying of other causes. The presenting complaints almost always included nuchal and occipital headaches, often incapacitating. One or more neurologic signs of impaired cerebral circulation appeared. These were vertigo and syncope, aphasia, memory defects, transient paralyses or paresthesias and visual disturbances. Nosebleeds were also more common.

Physical examination demonstrated slightly higher and more stable levels of arterial blood pressure in those who eventually succumbed to cerebral hemorrhage. In this group the retinal vessels were 30 per cent more severely constricted and sclerosed than in the others. The appearance of three or four linear or drop-like retinal hemorrhages was of special significance. It occurred in all but 3 of those in group H and in only 2 of those whose death was not the result of cerebral hemorrhage, and in 1 of these the hemorrhages were atypical and apparently due to other causes.

Five elements were especially common among those in group H. These were (1) severe nuchal or occipital headache, (2) vertigo or syncope, (3) motor or sensory neurologic disturbance, (4) nosebleed and (5) retinal hemorrhages in the absence of papilledema or exudates.

All but 1 of 19 patients who had apoplexy presented at least four of these five signs and symptoms, and the remaining patient had three of them. Contrariwise, only 3 of the 21 individuals who died of other causes had as many as three such findings, and these were less pronounced. Our patients who had apoplexy lived an average of 2.1 years (range 0.8 to five) after the appearance of any one of these five signs and symptoms. The incidence of cerebral hemorrhage in essen-

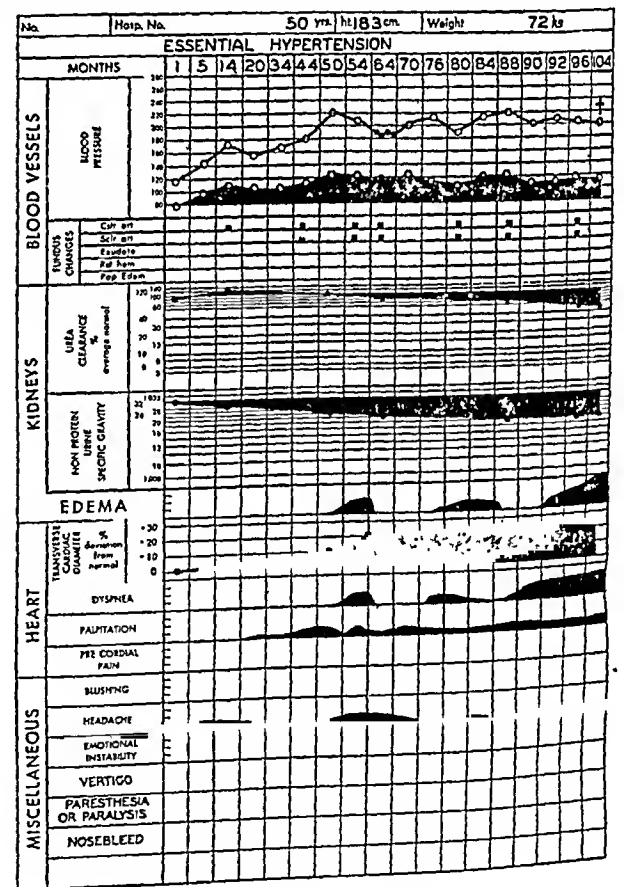


Chart 2.—Average clinical course in group C.

tial hypertension, as we define this state, is much greater than the 7.2 per cent of Paullin, Bowcock and Wood⁹ and the 14 per cent of Janeway.¹⁰ This may be because we excluded those with malignant and

9. Paullin, J. E.; Bowcock, H. W., and Wood, R. H.: Complications of Hypertension. *Am. Heart J.* 2: 613, 1927.
10. Janeway, T. C.: A Study of the Causes of Death in One Hundred Patients with High Blood Pressure. *J. A. M. A.* 59: 2106 (Dec. 14) 1912.

"neurogenic" hypertension (Corcoran, Taylor, Shrader, Young and Page⁸), most of whom die of other causes.

If the symptom complex present among this group of patients proves useful in predicting cerebral hemorrhage, it may be that the problem of preventing these accidents has been made an accessible field of study.

SUMMARY AND CONCLUSIONS

The records of 40 patients who died with essential hypertension were examined to determine whether or not the clinical courses of those who died of cerebral hemorrhage were similar enough to allow an accurate prediction of apoplexy. Among this group 19 had fatal cerebral hemorrhages. Five signs and symptoms were consistently observed. These were (1) severe occipital or nuchal headaches, (2) vertigo or syncope, (3) motor or sensory neurologic disturbances, (4) nosebleeds and (5) retinal hemorrhages in the absence of papilledema or exudates. These findings were negligible or absent among those patients who died of other causes. It is concluded that demonstration of any four of these manifestations in persons with essential hypertension warrants the assumption that death from cerebral hemorrhage will occur within 0.8 to five years (average 2.1 years).

SKIN HAZARDS IN THE MANUFACTURE AND PROCESSING OF SYNTHETIC RUBBER

LOUIS SCHWARTZ, M.D.

Medical Director, Chief, Dermatoses Section, Industrial Hygiene Division, Bureau of State Services, U. S. Public Health Service, Federal Security Agency
BETHESDA, MD.

When the war cut off our principal supply of natural rubber from the East Indies it was necessary to find a substitute in order to carry on the war successfully. For more than twelve years before the war the Du Pont de Nemours Company had made neoprene, the first of our synthetic rubbers. Shortly before we entered the war the Standard Oil Company of Louisiana obtained the German patents for making buna S, the type of rubber now mostly used.

The principal types of synthetic rubbers now manufactured in this country are buna S, buna N, butyl rubber and neoprene. Buna S, butyl rubber and neoprene are the types now being made for our armed forces.

BUNA S

Buna S is made from butadiene and styrene. Butadiene can be made from alcohol and from butylene, a product fractionated from high line gas and light pressure distillate taken from petroleum oil.

BUTADIENE FROM ALCOHOL

Ethyl alcohol is heated in closed kettles over a catalyst and converted to acetaldehyde. The acetaldehyde is heated over a catalyst to form butadiene. These processes take place in closed kettles, and there are no exposures of the workers to the chemicals because the operation is controlled from a control room. However, in cleaning the kettles and reactors the maintenance crews come in contact with some of the chemicals formed during the conversion, and cases of dermatitis have occurred chiefly from acetaldehyde. Among the other chemicals and by-products which may

be encountered in cleaning retorts and kettles, the irritants are butylaldehyde methylethyl ketone and acetic acid.

Tertiary butyl catechol is added to the butadiene in order to keep it from polymerizing while in the storage. Tertiary butyl catechol is a skin irritant, and workers opening the cans containing this product may develop dermatitis from splashes if they do not wear rubber gloves and impervious sleeves and aprons.

Butadiene is a volatile gas under ordinary conditions of temperature, and any dermatitis resulting from it is probably due to the freezing effect of its evaporation.

In plants making butadiene from ethyl alcohol, maintenance workers going into kettles, retorts or pipes for cleaning or repairing should wear rubber gloves, goggles, airline respirators or gas masks, impervious coveralls and boots. They should step under the shower with all these clothes on immediately after completing the job in the retorts and then remove the protective clothing and don their street clothes.

While handling tertiary butyl catechol, workers should wear goggles, rubber gauntlets and rubber aprons, which should be kept close by the tank in which the cans are opened and melted.

BUTADIENE FROM BUTYLENE

Butylene is heated to a high temperature in reactors in contact with a catalyst resulting in the formation of butadiene. The entire process is totally enclosed and automatically controlled. Skin hazards are present only to maintenance men cleaning or repairing the reactors. When such work is being performed the men should be protected as prescribed for maintenance men making butadiene from alcohol.

STYRENE MANUFACTURE

Ethylene is combined with benzene in order to form ethylbenzene. Aluminum chloride is used as a catalyst in this operation. The aluminum chloride is dumped into the hopper by hand and the worker is exposed to it twice during a shift. Since aluminum chloride is a skin irritant, the worker while engaged in handling it should wear rubber gauntlets, aprons and goggles. Sodium hydroxide is used in the process. Workers handling the caustic should wear rubber gauntlets, aprons and safety goggles. The waste discharged from the reaction of ethylene with benzene is a black tarry irritant substance. Therefore workers handling this waste should also wear rubber gloves, impervious sleeves and aprons. They should be instructed to change their clothes immediately after they become soiled with this tarry material. Ethylbenzene is heated over a catalyst to form styrene. This process is totally enclosed. Tertiary butyl catechol is added to styrene to prevent polymerization while in storage. While handling this chemical the workers should wear goggles, rubber aprons and gauntlets.

MANUFACTURE OF BUNA S

Buna S is made by stirring a mixture of butadiene, styrene, soap solution, an oxidizing salt and a chain modifier in a polymerization kettle for about eighteen hours. Hydroquinone also is used. The unreacted styrene and butadiene are recovered from the latex. The antioxidant is then added to the latex. The latex is coagulated by adding acidification and the rubber is screened out of the liquor, washed, dried, baled, powdered and packed. The butadiene and styrene are usually brought to the plant in tank cars. Workers engaged in emptying the styrene tank cars should wear

From the Dermatoses Section, Industrial Hygiene Division, Bureau of State Services.
Read before the Rubber Section of the National Safety Council Meeting in Chicago, Oct. 3, 1944.

impervious protective clothing to protect them from accidental splashes. The process of removing tertiary butyl catechol from butadiene by bubbling it through a solution of caustic soda entails no hazard because it is totally enclosed. The red liquid, sodium salt of tertiary butyl catechol, is disposed of by burning.

Most of the occupational dermatitis occurring in the manufacture of buna S is caused by chemicals added to the butadiene and styrene in order to make the reaction possible. These chemicals are as follows: 1. The per salt which is used as an oxidizer or catalyst rarely causes dermatitis. 2. The chain modifier which is added to the mixture in the polymerization kettle is a primary irritant and sensitizer. 3. Hydroquinone, which is added to the latex in the polymerization kettle, is a sensitizer. 4. The antioxidant, usually consisting of phenylbetanaphthylamine, is a sensitizer. Bardol, a coal tar derivative, is sometimes added to the phenylbetanaphthylamine. Bardol is a primary irritant and photosensitizer. 6. Soapstone or talc is used to cover the bales of rubber. Dermatitis can result from coarsely powdered soapstone, especially in hot weather. 7. The compound which is sometimes used as a modifier instead of or in conjunction with the original modifier is also a primary skin irritant. 8. Sodium lignin sulfonate, sometimes used, is a sensitizer.

Workers in the pigment room handling these chemicals should wear protective clothing in the form of rubber gauntlets, impervious sleeves and aprons. Workers dumping chemicals into reaction kettles should wear similar protective clothing.

Workers engaged in handling the baled rubber are exposed to soapstone and talc and often develop dermatitis. The talc and soapstone are usually coarse and contain sharp spicules which wound the skin, especially when it is perspired and macerated. Unless some method is devised whereby the dust exposure to the workers is eliminated, such workers should wear closely woven coveralls and leather gloves, cleaned daily in the plant. They should also be compelled to take shower baths after work. In some plants a very fine grade of talc is used, fine enough to pass through a 300 mesh screen. In such plants there is no dermatitis from talc.

Dermatitis also occurs among workers making the coagulating solution. In warm weather this solution deposited on the perspiring skin of the arms can cause dermatitis. Protective sleeves will prevent this condition.

Workers engaged in making the soap solution may also develop dermatitis from the soap flakes. Protective sleeves and aprons will prevent this.

A considerable portion of the dermatitis occurs among the workers engaged in cleaning the driers. They are compelled to enter the driers and lie on their backs in closely confined spaces, removing from the traveling chain or belt the adherent, incompletely polymerized rubber. Dermatitis occurs on the body of these workers and is caused by the incompletely polymerized rubber and the uncombined chemicals which it contains.

About 0.5 per cent of the styrene remains unchanged in the rubber as it comes from the drier. The phenylbetanaphthylamine in the incompletely polymerized rubber combined with the bardol sodium lignin sulfonate, and so on, are probably the principal causes of dermatitis among workers cleaning the driers. The faces of these workers should be protected by a protective ointment of the lanolin-castor oil type. They

should be furnished with clean coveralls and gloves and take compulsory showers after each session in the driers. The future driers should be roomy and so constructed that the workers can clean them in a standing position. Samplers of latex in the reactor building should wear rubber gauntlets, impervious sleeves and aprons while drawing fluid from the reactors. Workers dipping their hands into the slurry of rubber, brine, latex and acid in the coagulation building should wear rubber gauntlets. In some plants soda ash is added to soften the water used in making the soap solution and the brine. Workers coming in contact with soda ash should be furnished with impervious coveralls and rubber gloves, daily cleaned at the plant, and should be compelled to take showers after work.

NEOPRENE

There is comparatively little dermatitis in the manufacture of neoprene. The principal type of neoprene manufactured is called type G. R. M. and is made from acetylene. This is converted into vinyl acetylene by the use of a catalyst. The reaction takes place in retorts placed behind explosion proof walls and is remotely controlled. Vinyl acetylene is a gas with a boiling point of 5 C. Vinyl acetylene is reacted with hydrochloric acid to form chlorobutadiene. Chlorobutadiene is a liquid with a boiling point of 60 C. It is a primary irritant, and accidental splashes cause erythema even if it is soon washed off with water. Chlorobutadiene is mixed with sulfur and rosin placed in a kettle of soap solution to which a per salt is added as a catalyst and is agitated for about two hours to form neoprene latex. In emptying the kettles some of the latex spills on the floor and dermatitis occurs on the feet and legs of operators from contact with the latex. The latex contains unreacted chlorobutadiene, the pungent odor of which is present in the building. The latex has a pH of 10, which also adds to its irritant properties. About 5 per cent of the workers exposed to chlorobutadiene have some temporary loss of hair. It is not known whether this is caused by a local or a systemic effect. The hair becomes normal after exposure ceases.

The neoprene latex is deposited into cooled revolving drums which coagulate the neoprene and roll it off in a thin sheet. The sheet is washed and then passed festoon fashion through a drier. After coming from the drier it is compressed into roll form, passed through finely ground talc, cut into lengths of about 12 inches and packed into bags. There have been no cases of dermatitis among the workers exposed to the finely ground talc.

Other types of neoprene are type G. N., type I, type K. N. and type F. R. These differ somewhat in composition. Neoprene latex is made from type G. N. and is simply the uncoagulated latex. The latex liquor is made from rosin soap and has a pH of 9-10. It also contains a small amount of unreacted chlorobutadiene.

BUTYL RUBBER

Butyl rubber is made from isobutylene and isoprene. These chemicals are dissolved in methyl chloride and reacted over a catalyst (aluminum chloride). The liquid is circulated and cooled in a reactor through metal tubes. As the rubber is formed it rises to the top of the reactor, where it meets a stream of steam which carries the rubber away. Phenylbetanaphthylamine is added to the slurry of hot water and rubber. The worker adding the phenylbetanaphthylamine should wear rubber gauntlets, impervious sleeves and aprons. The rubber is screened out of the slurry and then

passed through a drier, from which it is extruded in a continuous sheet. Xylyl mercaptan is added to the rubber before it passes through the extruder. This substance is a skin irritant and the workers at the extruder should wear impervious sleeves and aprons, and a protective ointment on the face. The rubber after coming from the extruder is passed through a hot mill. The workers on the mill develop burns and blisters of the hands from the hot rubber and dermatitis from the fumes of phenylbetanaphthylamine and xylyl mercaptan. They should be provided with heat proof gloves and a protective ointment for the face.

BUNA N

Buna N is made by reacting butadiene with acrylonitrile in a manner similar to that described for the manufacture of buna S. Buna N is partially dehydrated in a centrifuge or by pressing between rollers before being passed through the drier. The temperature of the drier is higher than that for buna S, and the time of drying is less. Practically all the unreacted monomers remaining in buna N are vaporized in the drier and drawn off by suction. The driers are roomier and do not require as frequent cleaning as do the driers for buna S, and the workers entering the drier are not required to lie on their backs and work in narrow spaces. The raw chemicals used in the manufacture of buna N are (1) butadiene, (2) acrylonitrile, (3) soap suds containing a wetting agent, (4) a modifier, (5) a catalyst which consists of oxidizing salts, (6) an antioxidant, which may be phenylbetanaphthylamine or phenylalphanaphthylamine or stalite, (7) sulfuric acid in a concentration of 0.5 to 1 per cent, used to coagulate the latex, (8) a 2 per cent barium chloride solution, which may also be used for this purpose, and (9) bone glue and casein used as emulsifiers.

Dermatitis may occur from acrylonitrile, which may leak out of enclosed pipes and retorts. The soap solution containing a synthetic wetting agent may cause irritation of the nose and throat. The modifiers are primary skin irritants. The antioxidants are sensitizers. Barium chloride may cause a dry scaling eczema of the palms.

The whole operation of making buna N is more enclosed than that for making buna S, and despite the fact that acrylonitrile is a powerful skin irritant there were no cases of dermatitis seen in the buna N plant which was inspected.

PROCESSING SYNTHETIC RUBBERS

The skin hazards occurring in the processing of synthetic rubbers are the same as those described for natural rubber, namely from the chemicals used in the rubber, with the addition of hazards from the synthetic rubber themselves. The chemicals to be used in the rubber are weighed out by hand. The worker comes in contact with all of them and should be protected with rubber gloves, impervious sleeves and aprons and a respirator. The rubber, either synthetic, natural or reclaim, and the chemicals are mixed into master batches, which contain a high percentage of the ingredients. These master batches are the ones used for compounding the actual rubber stock.

The chemicals to go in the rubber are mixed together either in a mixing mill or a Banbury mixer. The workers on the mixing mills come in contact with the chemicals and are exposed to whatever fumes may come off the rubber as it gets hot, and sensitization dermatitis may occur among them. The mix mills should be well exhausted and those workers who become

sensitized and develop dermatitis should be provided with a protective ointment of the water repellent type. Protective clothing is too hot to wear at this operation. Workers on the Banbury should wear clean dustproof coveralls furnished daily by the plant. Workers on the mix mills and the Banbury should take cleansing showers before going home. In most factories the rubber after being compounded is sheeted out and passes overhead in a continuous sheet to the various departments, where it is further processed.

Rubber which is going to be made into tires is extruded in the form of the tread. The fabrics, such as cotton and rayon, going into tires are impregnated with rubber either by calendering or by dipping into water dispersions. These operations are automatic and there are no particular skin hazards connected with them.

Rubber to be made into tubes is extruded through a tube shaped die, cut off into suitable lengths and cemented into circular tubes. Workers engaged in this operation sometimes get dermatitis from the rubber cement, which consists essentially of rubber dissolved in a solvent. Workers at this operation who develop dermatitis should wear thin washable leather gloves and use a long handled brush for applying the cement.

Tire builders handle fabrics impregnated with rubber and the various compounded rubbers which go into the tread and sides of the tire. They rarely develop sensitization dermatitis from the chemicals in the rubber.

The synthetic rubbers can be used in latex form. Thin rubber gloves may be made directly from latex in the same manner in which they are made from natural latex. Dermatitis may occur from synthetic latex because it contains more of the uncombined and unpolymerized chemicals than does the coagulated dried rubber.

PATCH TESTS

Hundreds of patch tests were performed on workers having dermatitis in the twenty plants inspected. Of twenty-four chemicals used as patch tests, the following positive reactions were obtained:

- Phenylbetanaphthylamine, antioxidant.
- Stalite, antioxidant.
- Hydroquinone.
- Buna S from driers.
- Neoprene latex.
- Safex (2, 4 dinitrophenyl dimethyl thiocarbamate), accelerator.
- Captax (mercapto benzo thiazole), accelerator.
- Eric (bis- 4, 5- dimethyl thiazyl disulfide), accelerator.
- Altax (benzothiazole disulfide), accelerator.
- Santocure (benzothiazyl 2, monocyclohexyl sulfonamide), accelerator.
- Asphalt.
- G. R. S.
- Buna N type of synthetic rubber.

SUMMARY

There is comparatively little dermatitis occurring in the manufacture of synthetic rubber despite the many irritant chemicals used. This is explained by the fact that the factories making synthetic rubbers are modernly equipped with mechanical safety devices and most of the safety recommendations made in this paper are already being carried out.

We need to anticipate but little more dermatitis from the manufacture and processing of synthetic rubbers than we have had from natural rubbers, provided future plants are erected with the same careful planning as the present ones and the safety recommendations in this paper are carried out.

COMMON MISTAKES IN HANDLING OF PATIENTS WITH ARTHRITIS AND ALLIED CONDITIONS

BERNARD I. COMROE, M.D.

PHILADELPHIA

Mistakes in the handling of arthritic patients often lead to unnecessary deformities and crippling. In some instances omission of proper therapy delays early recovery.

Some practitioners unfortunately treat arthritic patients for long periods without first establishing a definite diagnosis. Every effort should be made to diagnose the type of arthritis as soon as possible. This does not mean, however, that affected joints should not be splinted or that mild analgesics should not be given during periods of study of the patient. Physicians frequently err on this side and permit contracture deformities to develop and pains to persist because they think only in terms of a diagnosis without considering the patient's pain and discomfort and the progressive development of deformities.

Every patient with joint symptoms should have a complete history, thorough physical examination and appropriate laboratory tests. Rheumatoid arthritis, for example, may be simulated by numerous nonarthritic entities, such as parkinsonism, brucellosis, syphilis, leukemia, Raynaud's syndrome, scleroderma, hypothyroidism, hyperthyroidism and lupus erythematosus. Occasionally it is difficult even after a complete examination to differentiate between such diseases as early rheumatoid arthritis and acute rheumatic fever; this may require the passage of considerable time and follow-up studies.

It is a mistake to depend too much on the sedimentation rate alone in the diagnosis of joint disease. This test should be used only in conjunction with common sense, coupled with a carefully taken history and a thorough physical examination, blood count, urinalysis, serologic test for syphilis and x-ray films of the involved joints.

The sedimentation rate is not infallible and, if the results of this test are not in agreement with the diagnosis, the test should be repeated. If disagreement persists, the diagnosis should be questioned or one should search that patient for the presence of additional pathologic change which may be causing the rapid rate. Physicians occasionally forget that the sedimentation rate may be increased in pregnancy or during menstruation. A rapid sedimentation rate occurs in many disorders, such as sinusitis, bronchitis, pyelitis and osteomyelitis, when no joint phenomena are present.

A normal sedimentation rate does not rule out organic disease. Various forms of joint pathologic conditions may occur in the presence of a normal sedimentation rate, as in degenerative joint disease, most cases of fibrositis, gout (in the interval between acute attacks) and in patients with rheumatoid arthritis whose active process has been burned out and who are left with their deformities and crippling and an inactive process.

It is a mistake to tell the patient that the joint is normal because the x-ray examinations are negative. Despite the absence of obvious x-ray changes, one may have well defined limitation of motion in the joints.

One should not rule out rheumatoid arthritis on the basis of negative roentgenograms; early signs of rheumatoid arthritis may not appear on the roentgenogram for months or years. Similarly, punched-out areas in bones seen by x-ray should not be considered pathognomonic of gout, as they may occur in other disturbances such as rheumatoid arthritis and some cases of degenerative joint disease.

Numerous mistakes are made in the x-ray study of joints. One of the commonest of these is to accept the roentgenologist's report that there is no subdeltoid bursitis merely because he sees no evidence of calcification in the supraspinatus tendon. X-ray evidence of subdeltoid bursitis is present in not more than 50 per cent of cases; negative roentgenograms do not rule out subdeltoid bursitis.

Many conditions may manifest the same basic alterations in the x-ray. The pathologic and x-ray response of joints in various diseases is too similar to permit dogmatic interpretation of the roentgenogram. One should never rule out gout in acute cases merely by negative x-ray findings. The latter may be negative even in long-standing gout. Similarly, in the early stages of tuberculous arthritis, x-ray examinations of the joints may be negative.

It is an error to diagnose gout frequently in females. Between 95 and 98 per cent of all gout occurs in males. On the other hand, one should not wait until tophi appear before diagnosing gout, as these rarely appear before the fifth to the tenth year of the disease except in very severe cases.

Other diseases may cause pains and aches in various joints or muscles. Angina pectoris, parkinsonism, brucellosis, trichinosis, hysteria, hypothyroidism, scleroderma, lupus erythematosus, cancer and many other nonarthritic syndromes may cause aches and pains in joints and muscles and may simulate rheumatoid arthritis.

Patients with coronary artery occlusion may develop a painful shoulder after a few days or weeks and in some instances may have aches and pains in the hands together with swelling of the hands and thickening of the palmar fascia. The latter may in some instances resemble Dupuytren's contracture. Conversely, spondylitis, especially with involvement of the upper thoracic region, may result in precordial distress simulating angina pectoris.

In contrast to rheumatoid arthritis the physician must realize that degenerative joint disease is almost always present in individuals past 50 years of age, especially in the lumbar, cervical and sacroiliac regions. Bauer and his associates have shown that human joints remain normal for only several decades following birth and that when hyaline articular cartilage is damaged it does not degenerate but may be repaired somewhat by the formation of fibrocartilage.

Doctors rule out degenerative joint disease too frequently merely because a negative roentgenogram is found. In many instances no x-ray abnormality may be seen despite gross pathologic changes which may be present in the articular hyaline cartilage as shown at necropsy. Articular lipping is not an essential prerequisite for the diagnosis of degenerative joint disease. Extensive hypertrophic spinal changes may be found without symptoms. It is unusual to examine the spine roentgenologically in an individual past 50 years of age without finding some evidence of degenerative joint disease. In most instances such changes do not produce symptoms.

The physician should always explain to the patient that Heberden's nodes are not a sign of rheumatoid arthritis but are a manifestation of degenerative joint disease. Many persons with Heberden's nodes give a family history of these. One must assure these patients that they will not go on to helpless crippling and deformity such as may occur occasionally in some cases of rheumatoid arthritis but that the process is one of heredity coupled with age, wear and tear and that it will not lead to any especial persisting pain or to severe deformities. Heberden's nodes usually worry a patient more because of their unsightly appearance than because of their great degree of disability.

In patients with pain in the low back, the causation of such pain is often attributed to arthritis merely because there are hypertrophic changes in the lumbar vertebrae or sacroiliac region. In most instances backache is due to ligamentous and muscular strain. It has been shown that practically 50 per cent of all patients with architectural weakness of the spine have no symptoms whatever resulting from such a disturbance. It is a mistake to believe that because trauma to the low back has been minimal the resulting symptoms will be slight. The symptoms of lumbosacral strain may be out of all proportion to the trauma involved.

Low back pain is often wrongly attributed to the presence of congenital abnormalities found on roentgen examination. More than one third of all spines x-rayed for any purpose may show congenital abnormalities; however, in most instances the latter do not cause the patient's symptoms, although they may aggravate these.

Another common error is to believe that all low back pain is due to herniated intervertebral disks. Although the latter are extremely popular at the present time, these cause only a small proportion of all low back pain seen by the general practitioner.

Pain radiating down the legs is frequently diagnosed as sciatica. Sciatica is not a disease but is merely a symptom designating pain in the distribution of the sciatic nerve. It is no more a diagnosis than is headache.

It is also a mistake to omit roentgen examinations of the low back in individuals with persisting low back pain. Any persisting or recurring painful back deserves proper x-ray studies. The physician must realize that a correct diagnosis is essential in the successful treatment of low back pain. This often requires careful study of the patient together with a painstaking physical examination and in some instances additional tests, including x-rays of the low back.

Shortening of one leg and improper weight distribution may be important factors, aggravating or initiating persisting low back pain. In addition, the feet are often ignored. Chronic foot strain is an extremely common cause of pain not only in the foot and lower leg but also in the knee and low back.

Pronounced damage may result occasionally from a single injury. Injury may be a cause of joint discomfort even in the absence of evident anatomic changes. A single strain or contusion may produce years of pain and limitation of motion.

Another common mistake is to consider all spur formation on the os calcis as due to gonorrheal arthritis. Most spurs on the os calcis are not associated with gonorrhea. Gonorrheal arthritis may be present in individuals who have no symptoms referable to the genitourinary tract. It is also an error to believe that gonorrheal arthritis commonly involves the sterno-

clavicular, temporomandibular or spinal joints. Such involvement is relatively uncommon. However, conjunctivitis and tenosynovitis are extremely common in association with gonorrheal arthritis; this is not generally recognized.

One must not forget that joint damage may be due to syphilis. Syphilis may mimic any form of joint disease from the bilateral hydrops of the knees in children (the so-called Clutton's joints) all the way to the Charcot joint. Joint involvement in syphilis may become increasingly infrequent with the introduction of penicillin and massive arsenotherapy in the treatment of syphilis. One should always request a serologic test for syphilis in any patient with joint aches and pain.

Most physicians are apt to misdiagnose neuritis or arthritis in persons with a history of a painful shoulder. It is extremely uncommon to find an arthritis which develops in the shoulder joint except in association with arthritis in other regions of the body. Likewise, neuritis involving only the upper arm is extremely uncommon in comparison with the frequency of subdeltoid bursitis or periartthritis of the shoulder—the most common lesion about the shoulder joint. In most instances this lesion is due to small tears, hemorrhages or calcification in the supraspinatus tendon with secondary involvement of the subdeltoid bursa. Any lesion about the shoulder which causes pain may be associated with spasm of the scalenus anticus muscle with its characteristic group of symptoms including pain in the shoulder, together with pain and numbness radiating in many instances to the elbow or to the finger tips.

Unfortunately, there are insufficient funds in this country for investigative work and inadequate hospital facilities for the care of arthritic patients. There are not more than 200 free beds in the United States for rheumatic patients as contrasted with approximately 100,000 free beds for the care of tuberculous patients, despite the fact that arthritis and allied conditions affect more persons in this country than the sum of all patients having tuberculosis, cancer, diabetes and heart disease. We must have hundreds of small and large hospitals scattered throughout the United States under the supervision of trained personnel and devoted solely to the study and care of arthritis and allied conditions. The medical profession should attempt, as soon as possible after the present conflict, to utilize some of the present army hospitals as centers for the study and care of arthritic patients. This is probably our most pressing need in the care of such patients at the present time.

One of the mistakes commonly made by practitioners in the treatment of arthritic patients is to depart from recognized remedies. As there is no specific drug which will cure all cases of rheumatoid arthritis, practitioners frequently resort to many widely advertised, but usually ineffective, remedies in the handling of these patients. The physician must realize that when using therapy which is not accepted by the majority of physicians in his vicinity he does so at his own risk and peril, and if such departure results in injury to the patient so treated the physician is liable for the damage despite how good his intentions may have been.

We do not have a specific magic bullet for the treatment of rheumatoid arthritis. The practicing physician should not be misled by overenthusiastic statements which may appear in the advertisements of some drug houses. On the other hand, he must not be pessimistic concerning the outlook in the arthritic patient.

The treatment of rheumatoid arthritis requires months or years of careful management, and it is a

mistake to tell the average patient that he will be greatly improved within a few days or weeks. The physician must manifest an honest degree of optimism in handling these patients. He must never promise a cure in rheumatoid arthritis, but the patient can be told that with proper care he has about nine chances out of ten of being definitely benefited.

The patient must not be led to believe that his improvement will be steady and uninterrupted, as changes in weather, emotional upsets and other factors may produce exacerbations of the disease despite every effort to avoid these.

A common mistake in the handling of arthritic patients is to treat the joints and to neglect the patient's general health and comfort. One must always remember that one is treating a human being and not merely a few joints. The patient with rheumatoid arthritis may develop a sinusitis, bronchitis, acute appendicitis or other ailments, either organic or functional, which demand treatment just as much as does the arthritis.

The patient with rheumatoid arthritis should not be told to go to bed for prolonged periods without proper exercise and massage. If the patient lies in bed like a lump of putty, much harm can be done. Adequate periods of rest each day are of extreme importance in the handling of most patients with rheumatoid arthritis. If it is advisable for the patient to spend several hours or more in bed each day, the physician must prescribe very carefully and must outline in detail exercises which should be done by that individual. A member of the patient's family should be trained as well as possible to give massage daily in addition to periodic massage by a trained masseuse. The amount of time required and the type of massage vary from patient to patient. Exercises likewise must be prescribed for the individual and must be particularly suited to his case.

Some patients with rheumatoid arthritis move their joints as much as possible in an attempt to avoid deformities and to prevent the joints from becoming stiff. Excessive motion of the affected joints in these patients in the acute stage of the disease usually leads to further damage of the joints and to increased pain, swelling and stiffness. One must carefully balance the amount of rest and exercise in an individual. Each patient should have sufficient exercise to prevent stiffness of the affected joints and sufficient rest to permit healing. A good general rule in this respect is never to exercise the affected joints to the point of persisting pain or fatigue.

Many mistakes are made in the use of physical therapy. Physical therapy alone will not cure most cases of arthritis. On the other hand, physical therapy should never be omitted in the treatment of average arthritic patients, particularly those with subacute or chronic forms of arthritis.

Physical therapy in rheumatoid arthritis should not be given only two or three times a week in the physician's office or in the hospital. This should be carried out daily if possible. A routine should be prescribed which can be continued in the patient's home, supplemented by additional physical therapy at the office or hospital as indicated.

Although most patients with rheumatoid arthritis are grateful for the application of heat, one should not continue to apply heat to the patient if this makes him worse. The beneficial effects from diathermy or short wave therapy are not due to any specific biologic or

bactericidal action. Some physicians make the mistake of permitting the patient to regulate the current in diathermy treatments, and occasionally a physician applies diathermy electrodes to the broken skin.

One of the worst mistakes that is made in cases of rheumatoid arthritis is to permit pillows to be placed under the knees. If the knees are involved in the arthritic process, every attempt must be made to keep the knees extended; pillows under arthritic knees will lead to contracture deformities.

Similarly the patient should not walk with a deformed, flexed knee joint when this can be straightened; walking with the knee flexed may produce distortion in both the lower extremities and in the trunk. It is easier to prevent a deformity than to correct one.

All physicians should be willing to learn to use plaster in their cases of arthritis. The internist will find that there is less danger of ankylosis if joints are properly splinted than if they are constantly moved.

One should not permit splints to remain in place for long periods without removing them. In cases of rheumatoid arthritis the splints should be removed at least once a day and the affected joints moved through at least two or three full painless motions to prevent the formation of dense adhesions.

Joints that are acutely inflamed should not be manipulated. These should be kept at rest as much as possible. In such cases when muscular exercises are begun they should be performed slowly, because rapid motion quickly produces fatigue in muscles and rapid sudden jerky movements may produce further damage to arthritic joints.

The general practitioner should not administer gold salts without first studying carefully the reactions which may occur following their use, as well as the indications, contraindications and proper dosage for best results. Gold may be toxic and certainly is not the final answer to the treatment of rheumatoid arthritis. Some patients are not improved following adequate gold therapy, and others may develop toxic reactions; in some, relapses may occur following the termination of the course of gold therapy. It is generally believed that gold therapy in rheumatoid arthritis is still too dangerous to be employed by the practitioner without previous special instruction and careful study.

Some physicians still employ large doses of gold salts. Our results when using only 25 mg. of the gold salt have been as good as when using 100 mg. (as was formerly given) at each injection. Using the smaller dose, toxic reactions have been reduced enormously and such reactions, when they occur, are usually mild and of short duration.

Gold salts should not be given in any form of joint disease except rheumatoid arthritis. They are of no value in the treatment of degenerative joint disease, gout, fibrositis, specific infectious forms of arthritis or rheumatic fever. One should not continue using gold if the patient shows any untoward reaction, no matter how mild this may be. The unpredictable nature and time of the toxic reactions following gold therapy are the chief hazards in their use.

One cannot predict which patients will develop signs of toxicity or complications from gold. Either the patient or his family must be informed in advance of treatment of the possibility of toxic reactions.

It has never been shown that any particular form of vitamin deficiency produces rheumatoid arthritis. Some physicians prescribe massive doses of vitamin D in the treatment of rheumatoid arthritis. Most arthritic clinics

in large teaching hospitals no longer routinely employ massive doses of vitamin D in the treatment of this disorder. The Council on Pharmacy and Chemistry has stated that clinical evidence does not warrant the claim that massive doses of vitamin D are of benefit in chronic arthritis. It is a mistake to use massive doses of vitamin D without realizing that toxic symptoms may arise following its use. There is a definite risk of renal damage in addition to frequent gastrointestinal upsets.

Another common mistake in the handling of patients with rheumatoid arthritis is to advise the patient to give up his job, sell all his belongings and move to the Southwestern part of the United States in the hope that he will be miraculously and suddenly cured of his rheumatoid arthritis. Unfortunately, such does not occur. In most cases of rheumatoid arthritis, change in climate alone will usually not result in definite improvement in the arthritic picture. Holbrook has found that chronic arthritis may continue as a sad and crippling disease even on the Arizona desert. Hench has advised that most patients with rheumatoid arthritis should battle their arthritic problems at home and should not be encouraged to endanger their economic status or disrupt their social ties in a vain attempt to seek a climate that cures. This does not apply, however, to rheumatic fever, as these patients will usually be distinctly improved by a residence in the tropics or in the Southwestern part of the United States, Puerto Rico or similar regions. However, a tropical climate will not cure rheumatic heart disease and will not remake damaged valves. Likewise it will not influence cardiac decompensation.

Unfortunately it is the general belief of many patients and of some physicians that a stay of twenty-one days or more at a spa will cure rheumatoid arthritis. Many persons with rheumatoid arthritis may be greatly improved by hydrotherapy and by a vacation away from home. However, the physician must not mislead his patient with rheumatoid arthritis to make a great financial sacrifice unnecessarily. Buoyancy is present in the water in any bathtub whether the patient is at home or in a high priced spa. Furthermore, it has never been shown conclusively that mineral baths or applications of mud are particularly beneficial because of absorption of minerals or salts from these. As yet we have no good proof that appreciable amounts of any element are absorbed from mineral waters or muds.

Another common fallacy is to believe that a specific diet will cure most cases of rheumatoid arthritis. There is no proof that any particular diet will lead to the production of rheumatoid arthritis or that a specific diet in itself will cure rheumatoid arthritis. Most physicians treating these patients now employ a sensible high caloric, high vitamin, anticonstipation regimen, including at least several glasses of milk per day, fresh green vegetables, fresh citrus fruits or fruit juice and adequate protein together with other foods to make up the caloric requirements.

Most internists believe that it is unwise to permit a definite focus of infection to remain if this can be eradicated without detriment to the patient. While the removal of focal infection per se seldom produces much improvement in the patient with rheumatoid arthritis, such a procedure may lessen the burden which the patient is carrying. We do not yet know the role of focal infection in most cases of rheumatoid arthritis.

Unfortunately, most medical men have but little knowledge concerning the teeth and their disorders;

however, they do not hesitate to tell the dentist which teeth must be extracted. It is hoped in the future that the dentist will be considered as a consultant and not merely as a mechanic. Frequently the physician will order extraction of all pulpless teeth in an arthritic patient despite the fact that there is no more evidence to warrant their extraction from a patient with rheumatoid arthritis than from a patient without arthritis. On the other hand, a negative roentgenogram of a pulpless tooth does not eliminate the tooth as a possible source of infection.

It is always a mistake to tell the patient or his family that the removal of a focus of infection will cure his rheumatoid arthritis; improvement will result in only a small percentage of patients following this procedure.

Many patients with rheumatoid arthritis require analgesics, especially in the early stages of their disease. Although some physicians employ analgesics in these cases, the dose is usually insufficient to relieve the pain or discomfort. It is often necessary to employ at least 0.3 Gm. of acetylsalicylic acid and of acetophenetidin two or three times a day and again at bedtime in order to produce temporary symptomatic relief. A small dose of acetylsalicylic acid alone will usually not relieve the pain and will thus leave the patient pessimistic concerning the outlook for his joints. Although aminopyrine will usually relieve pain in patients with rheumatoid arthritis as well as in those with rheumatic fever, it is inadvisable to use this drug routinely because of the possibility of the production of agranulocytic angina.

It is almost always a mistake to give narcotics to patients with rheumatoid arthritis, except as an emergency measure in a very few instances. If it is necessary to employ narcotics over a long period of time, one should check the diagnosis as this is probably in error. A prolonged need for narcotics for a patient with joint symptoms suggests the probability of a neoplasm.

Some physicians have advised their female patients with rheumatoid arthritis to become pregnant, as pregnant patients often notice a decided amelioration of their rheumatoid arthritis. This is often a mistake; although the patient is relieved of many of her arthritic symptoms during the pregnancy, the joint pain, swelling and stiffness usually return in a more aggravated form within four or six weeks following delivery. Less than 10 per cent of patients with rheumatoid arthritis who become pregnant are relieved of their rheumatoid arthritis for long periods following delivery.

Injections such as vaccines, sulfur, chaulmoogra oil or foreign protein will not straighten chronically deformed, ankylosed joints. Although these preparations may be of some benefit as a psychotherapeutic measure, they have not been proved to be of permanent value in the treatment of most cases of rheumatoid arthritis. Recent work has shown that injections of sterile saline solution will produce symptomatic benefits as great as the benefits derived from injections of specific or nonspecific vaccines.

The practitioner must realize the importance of the general problem of arthritis. With a correct early diagnosis and thorough and proper treatment, many of these patients will be greatly benefited and most deformities may be avoided. The physician must not look on the arthritic patient merely as another candidate for a series of injections of drugs of doubtful value, but he must develop a well rounded program of therapy which will vary with each patient depending on the peculiarities of that case. In addition, the medical

profession must find some means of providing adequate hospital care for these patients at the earliest possible date. There is an immediate need for institutions with facilities which are adequate to care for the millions of Americans who require hospitalization because of their arthritic status. The importance of this problem cannot be overemphasized.

133 South Thirty-Sixth Street.

Clinical Notes, Suggestions and New Instruments

SECONDARY CLOSURE OF DECUBITUS ULCERS WITH THE AID OF PENICILLIN

LIEUTENANT COLONEL JOHN D. LAMON JR. AND
CAPTAIN EBEN ALEXANDER JR.
MEDICAL CORPS, ARMY OF THE UNITED STATES

Much has been published concerning the care and healing of decubitus ulcers in recent years, but, as far as can be determined, no reports of the successful closure of decubitus ulcers either in areas of normal sensation or in areas of anesthesia have so far appeared in the literature.

REPORT OF CASE

A private first class aged 22 while on duty in the North Pacific Theater on Oct. 13, 1943 was accidentally injured, the back wheels of a heavy truck running directly over the lower part of his back. Following the accident the patient suffered immediate paralysis below his waist. He was unable to void urine, and a catheter was put in the bladder. The patient was found to have a compression fracture of the twelfth dorsal vertebra with some posterior dislocation of this and the tenth and eleventh vertebrae. He suffered other contusions and abrasions and in addition a fracture of the coronoid process of the left ulna, with a partial paralysis of the left ulnar nerve.

He was evacuated to the United States, finally arriving in a general hospital on December 14, two months after the original accident. On admission to the hospital he was found to have a complete paraplegia with complete anesthesia below the level of the first lumbar nerve bilaterally. He showed evidence of a recovering ulnar nerve paralysis on the left side. Over his back were three decubitus ulcers, one at about the level of the twelfth dorsal vertebra in the area of normal sensation, one over the sacrum at the border of normal sensation and one just above the intergluteal fold in the midline in the area of anesthesia. All of these ulcers were infected and showed positive cultures for staphylococci. Lumbar punctures done below the level of the injury to the vertebrae showed evidence of incomplete spinal fluid block.

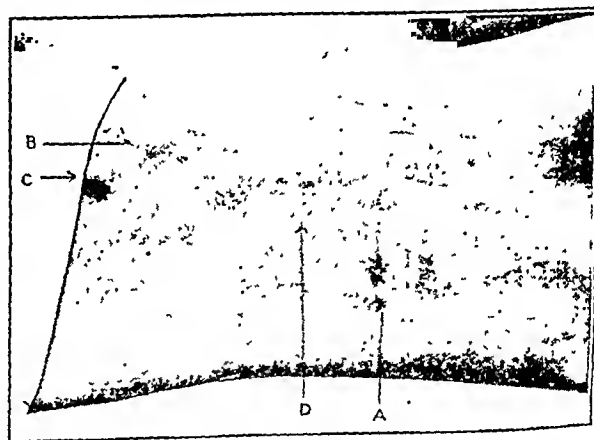
During the next month the patient experienced great difficulty with his bladder, which had been previously infected in spite of constant urethral drainage. A suprapubic cystotomy was done by the urologic service, which necessitated the patient's lying on his back most of the time for several days. This made the decubitus ulcers both deeper and larger. After the suprapubic wound had sealed over it was possible to turn the patient on his face, and frequent dressings with urea and sulfanilamide powder were carried out. By this method gross infection in the decubitus ulcers was kept down, but healing from the edges was extremely slow.

It was felt that because of the evidence of partial block to the spinal fluid a laminectomy should be done as soon as possible in order to give the patient every possible chance of recovering function of his legs and bladder. However, because of the large ulcers on his back, one of which was quite close to the site of the proposed laminectomy, some other method of quick closure of the wounds was felt to be necessary. Consequently closure of the wounds was attempted by the use of penicillin. On Feb. 16, 1944, after the patient had had 100,000 units of penicillin intramuscularly for twenty-four hours, each of the wounds was carefully excised in elliptic fashion. The granulation tissue in the bed of the ulcers was removed *en masse*

with the skin edges. The edges of the skin were undermined as far as necessary to allow closure of the wounds. With a needle and syringe 250 units of penicillin per cubic centimeter was injected copiously into each wound and directly into the subcutaneous tissues around each wound, 20 cc. being used in each wound. The wounds were then closed in two layers with interrupted sutures of number 40 white cotton. The exception to this was the decubitus ulcer over the upper end of the sacrum. In this instance it was necessary to use a slightly heavier grade of braided silk to bring the subcutaneous tissue together. Otherwise number 40 cotton was used throughout. After closure of the wounds, mild pressure with light sand bags was exerted over the back. Penicillin was administered in doses of 100,000 units intramuscularly daily for ten days postoperatively.

Sutures were removed from the wounds on the tenth postoperative day, and the wounds remained clean and free of infection. It was possible to perform a laminectomy of the tenth, eleventh and twelfth dorsal vertebrae on March 7, about three weeks after closure of the bedsores. Penicillin was also injected locally in the wound of the laminectomy, and this wound also healed without infection. There was only one small area of hematoma formation, measuring about 1 cc. in the lower end of the laminectomy wound. This healed without any further complication.

It was of interest that, following the healing of all wounds, the decubitus ulcer which had been closed with silk sutures began to show slight redness approximately five weeks after the



Healed decubitus ulcers (A, B, C) and postoperative laminectomy scar (D).

closure of the ulcers. During the period of about three weeks following this first redness of the wound, four silk sutures were removed from the wound. The wounds remained completely healed thereafter and no cotton sutures were at any time extruded from the wounds. The patient has been followed for more than three months after closure of the decubitus ulcers and there has been no further evidence of breakdown.

Since the laminectomy, which disclosed a very badly damaged cauda equina, the patient has shown definite improvement in the function of his bladder and it is possible now to leave the catheter out of the urethra. The patient has shown slight fibrillary twitches in the thigh muscles of his left leg. It is expected that he may continue to make slight but limited improvement.

SUMMARY

1. Successful closure of decubitus ulcers was carried out with the aid of penicillin administered parenterally and locally. The wounds were closed with interrupted sutures of cotton.
2. There has been no breakdown of the wounds in three months following closure except for the extrusion of four silk sutures which were of somewhat larger size than the cotton sutures used to close one of the three decubitus ulcers. No cotton sutures were extruded.

3. Although it is not possible to draw any final conclusions, it is of interest and importance that decubitus ulcers can be closed in this fashion and it is felt advisable to report this case for the information of others who might have similar problems.

TREATMENT OF A PERFORATING CORNEAL WOUND
WITH PENICILLIN AND SULFADIAZINE

NELL WHITE SANDERS, M.D., BALTIMORE

Small, dirty perforating wounds of the eye generally have rather grave consequences. This case is reported because not only was it a serious type of injury but there was much delay in beginning treatment.

M. O'R., a white man aged 78, first seen in the dispensary on July 9, 1944, stated that on July 5, while at work, he was struck in the left eye with a piece of bailing wire. He stated that the eye gave him no trouble until July 8, when it became painful and inflamed. On that day he applied for treatment at one of the general hospitals, where he was instructed to report to us immediately but did not find his way here until the following day.

The patient's past history was noncontributory. Although he was 78 years old he was still doing a "day's work." Physical examination was negative except for the findings in the left eye. On examination of the left eye the lids and adnexa were clear. The bulbar and palpebral conjunctiva was much injected. About 3 mm. from the limbus, opposite 6 o'clock, there was a puncture wound of the cornea with an ulcer about 2 mm. in diameter surrounded by an area of keratitis. A hypopyon about 5 mm. in depth and extending across the lower part of the anterior chamber was present. The presence of the hypopyon made it impossible to ascertain whether or not the iris was damaged. The pupil was not dilated; there were deposits of exudate on the lens capsule. The fundus could not be visualized. Finger tension was normal. The patient was able to recognize only hand movements.

He was hospitalized and placed on the orthodox sulfadiazine therapy: 2 Gm. immediately and 1 Gm. every four hours, with an equal amount of sodium bicarbonate. Fifteen hundred units of tetanus antitoxin was given on admission. Local applications in the form of hot compresses every two hours and atropine 1 per cent three times a day were used. His temperature was normal on admission and at no time during his hospital stay was he febrile. Hematologic studies approached normal, hemoglobin being 98 per cent (Sahli) with 4.35 million red cells per cubic millimeter. At no time during his hospital course did he show an increase in white cell count, and the differential was always within normal limits. A culture made from corneal scrapings at the point of penetration showed hemolytic *Staphylococcus albus* and nonhemolytic streptococcus.

Four days after admission to the hospital the eye was showing no improvement whatever with sulfadiazine therapy; the hypopyon was becoming larger and the whole inflammatory process was extending. We felt that unless something was done to arrest the process it would be necessary to enucleate the eye. Two thousand five hundred Florey units of penicillin was injected subconjunctivally. It was decided to use the penicillin subconjunctivally in an effort to build up quickly a good concentration at the point where it was most needed. The penicillin was made up in sterile distilled water so that each cubic centimeter contained 10,000 units, and then 0.25 cc. was injected subconjunctivally at a point opposite the hypopyon and near the limbus after five instillations of 0.5 per cent pontocaine at ten minute intervals had been used. Despite what should have been ample anesthesia, the injection was quite painful. Following the injection of penicillin the hypopyon did not become larger but remained stationary. Penicillin was then used as drops directly into the conjunctival sac, being instilled every two hours. During the time the penicillin was being used locally the sulfadiazine also was continued. After the penicillin had been used for three days it became apparent that local application was not adequate and penicillin intravenously, 10,000 Florey units, was given every three hours. It

was planned to continue the sulfadiazine along with the penicillin, but after four days it was necessary to discontinue the sulfadiazine because of hematuria. The penicillin was continued, 10,000 Florey units every three hours, for one week. At the end of this time it appeared that the exudate in the anterior chamber was becoming organized and it was decided to do a paracentesis in the hope that the formation of new aqueous would also furnish new antibodies. The paracentesis was done by introducing a keratome into the anterior chamber at the limbus opposite 4 o'clock. Much of the exudate drained out of the anterior chamber at the time of the operation, and for several days after it the wound was reopened with an iris retractor. Following this procedure the remaining exudate began to absorb, and while the penicillin was continued for an additional three days after the operation the patient was so much improved that the penicillin was discontinued and sulfadiazine therapy was reinstituted.

A total of 700,000 units of penicillin was used in conjunction with 77 Gm. of sulfadiazine. The sulfadiazine level was at no time above 10.4 mg. per hundred cubic centimeters and it was maintained around 4 or 5 mg. per hundred cubic centimeters for the greater part of the time.

After one month and four days in the hospital the patient was discharged, at which time his eye was clear, there being only slight injection of the bulbar conjunctiva and a small opacity of the cornea at the site of puncture. The pupil was not widely dilated, and a small amount of exudate remained on the lens.

Ten weeks after being discharged from the hospital the patient reappeared in the clinic. At that time the eye was clear; that is, the conjunctiva was white. There was a small opacity of the cornea below the pupillary area opposite 6 o'clock and about 3 mm. from the limbus. The pupil was about 2.5 mm. wide and did not react to light, being fixed by a membrane extending across the pupil. Vision in the eye was 5/200. The patient stated that he was working every day and that the eye was giving him no trouble.

SUMMARY

A patient was seen with a well developed hypopyon and other manifestations of an enophthalmitis. He was treated with a total of 77 Gm. of sulfadiazine and 700,000 Florey units of penicillin. While his recovery was not sudden and spectacular, the eye was saved.

1214 Eutaw Place.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., Secretary.

METYCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1944, p. 82).

The following additional dosage form has been accepted:
ELI LILLY & CO., INDIANAPOLIS

Metycaine Hydrochloride Ointment 5%: Metycaine hydrochloride 5 per cent in a base consisting of white petrolatum with white wax and wool fat.

TYROTHRIN (See THE JOURNAL, April 1, 1944, p. 985).

The following dosage form has been accepted:

PARKE, DAVIS & CO., DETROIT

Solution Tyrothrin 2% W/V: 10 cc. vials. Each cubic centimeter contains 20 mg. of tyrothrin in alcohol 92 per cent.

From the Baltimore Eye, Ear and Throat Hospital, Baltimore 17.
All penicillin used in this case was obtained from Maryland General Hospital, Howard and Madison streets, Baltimore, a depot for the distribution of penicillin for civilian use.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - CHICAGO 10, ILL.

Cable Address - - - "Medic. Chicago"

Subscription price - - - - Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, FEBRUARY 17, 1945

HEALTH INSURANCE LEGISLATION IN CALIFORNIA

In the Organization Section in this issue of THE JOURNAL appears an analysis of various proposals made to the 1945 legislature of the state of California relative to the care of the sick. The analysis covers only bills introduced before Jan. 27, 1945, although there are altogether some thirteen bills now before the legislature dealing with various aspects of medical care. The measure proposed by the Congress of Industrial Organizations would create a California health insurance commission on which there would be one physician out of a total of nine members. The state would be divided into areas, in each of which there would be directors, councils, appeal bodies and similar agencies typical of the expansive bureaucracies inevitable under such a plan. Attempts have been made in this proposal to meet the ideas of free choice of physician and fee for service when that is given by specialists.

An alternative proposal from Governor Warren of California provides an authoritative body containing eleven members and a manager (all to be appointed by the governor), and this time with two practicing physicians and one experienced in hospital management. In both Governor Warren's proposal and that of the C. I. O. the tax is 1.5 per cent on the employer and a similar amount on the employee. Payment is to be in accordance with a fee schedule adopted by the governing body, with free choice of physician from among such as will register under the act. Governor Warren's measure exempts, both from the benefits and from the taxes, people who depend on healing by prayer. The bill also exempts, both from the benefits and from the taxes, any industrial medical plan which contracts with the authority to continue its work. This would enable the Kaiser plan, for example, to escape the provisions of the act and to maintain its system of practice by a closed group of physicians under contract to the system. The authority given under the governor's proposal to the medical authority which is established is greater

than that ever given to any similar group, since it is authorized to expel from practice under the act any physician who intentionally violates any rule or regulation of the authority.

An assemblyman introduced into the California legislature a bill identical with the compulsory sickness insurance bill sponsored by Governor Olson in 1939. This sets up a division of medical service in the Department of Employment, is financed by a 1 per cent tax on employer and employee, and proposes to give complete medical service.

The California Medical Association offers a measure which proposes to aid and assist existing voluntary nonprofit plans. It does not contemplate any new taxes. The effect of this measure would be to stimulate tremendously enrolment by workers of the low income and middle income groups in voluntary plans.

A careful reading of these measures will indicate that the answer is not yet. The problem of establishing medical care for all under prepayment plans, either voluntary or compulsory, is complex and susceptible to various detrimental influences. Much carefully controlled experimentation with voluntary plans such as now prevails in many parts of the country is needed before anything resembling a real answer to the problem of medical care for all the people will be forthcoming.

ARTIFICIAL INDUCTION OF LACTATION IN BOVINES

Folley and Malpress,¹ working at the National Institute for Research in Dairying, University of Reading, in England under a research grant from the Agricultural Research Council, were able to induce lactation in nulliparous heifers and dry cows by the subcutaneous implantation of large numbers of small tablets of diethylstilbestrol or hexestrol. Individual variations and responses were large, but in some cases the lactation curve was comparable with that of normal lactation. The best response was obtained with a dry cow which gave a maximum yield of 30¼ pounds daily and a total yield of 7,400 pounds. Implants totaling 5 and 2.5 Gm. were equally effective and there appeared to be no difference in efficacy between diethylstilbestrol and hexestrol. Copious lactation was also induced in nulliparous heifers and dry cows by the subcutaneous implants of one or two tablets of hexestrol weighing approximately 1,000 mg.

The estrogen treatment was in most cases accompanied by a nymphomaniac syndrome which to a varying degree was exhibited by most animals under experiment. In 20 per cent of the experiments in which small tablets were implanted this nymphomaniac syndrome resulted in fracture of the pelvis, necessitating the slaughter

1. Folley, S. J., and Malpress, F. H.: The Artificial Induction of Lactation in the Bovine by the Subcutaneous Implantation of Synthetic Estrogen Tablets. *J. Endocrinol.* 4: 1 (July) 1944.

of the affected animals. The fractures appeared to have occurred during coital mimicry, a usual feature of the nymphomaniac syndrome. Since there was no evidence of decalcification of the pelvis² the fractures would not have occurred in all probability had the animals in question been kept under isolation during the period of treatment.

The mammary secretions produced by heifers artificially brought into lactation by treatment with synthetic estrogens were at the outset colostrum in nature,³ but the composition gradually changed to that characteristic of milk of good chemical quality at the rate proportional to the rate of increase in yield. In general, a daily yield of 5 pounds could be regarded as a guaranty of normal composition.

Hammond and Day⁴ performed similar experiments at the School of Agriculture at Cambridge on 140 cows and heifers, utilizing the implant method of tablets of diethylstilbestrol or hexestrol. They found that during treatment follicle growth ceased and occasionally the corpus luteum persisted; after removal of the implant follicle growth began and ovulating was resumed, sometimes after a transient period of follicular cysts. The heifers used were animals which had failed to get in calf. After treatment a number of those with normal organs were subjected to copulation and a large proportion got in calf. Mammary growth in heifers has occurred. Lactation has not resulted in every case, and sometimes the volume of secretion was low, but many animals have given commercial yields.

These experiments indicate that copious lactation may be initiated in maiden heifers and dry cows in a useful proportion of cases by the subcutaneous implantation of solid tablets of synthetic estrogens. Two main processes are involved in the lactation response, growth of the mammary gland followed by initiation and maintenance of lactation. Probably on the basis of analogy with experiments on small animals, progesterone is needed for full alveolar development in the bovine as well as estrogen. However, the interpretation of evidence regarding the necessity or otherwise for the precipitation of progesterone in mammary growth has been complicated by the isolation of progesterone from the adrenal cortex. Since no corpora lutea were found during treatment in the ovaries of the bovines used in these experiments, Folley and Malpress argue that the only source of progesterone would therefore appear to be the adrenal cortex. On the assumption that progesterone is necessary for full mammary development in the bovine, it is conceivable that insufficient mammary

alveolar development due to deficiency of progesterone may have been a limiting factor in some cases in which the lactation response was possible. Even in the presence of ample progesterone, if the estrogen dosage was excessive or too prolonged, mammary development may have been curtailed or of an abnormal type, so that the secretory power of the gland would have been sub-optimal. In fact, Gardner has described inhibition of mammary growth in various species by high doses of estrogens. The experiments of the authors provide evidence that estrogen will stimulate the production of lactogenic and galactopoietic hormones by the anterior pituitary under suitable circumstances provided the dosage is not too high.

FLUORINE AND FRACTURES

Twenty years ago attention was directed to the discovery of fluoride in domestic water supplies as the causative factor in dental fluorosis, or mottled enamel.¹ In the intervening period intensive investigation has been made of the physiologic chemistry of this element with respect to its influence on the skeleton, its metabolic effects and its relation to dental caries. In view of the observation² that fluorine in the drinking water is correlated with a significant decrease in dental caries, suggestions have been made that fluoride be added to city water supplies in areas where this element is absent. However, the need for caution has been repeatedly expressed, as several less desirable effects of ingested fluoride have been noted. One of these is the decrease in breaking strength of bones when fluoride is present in the diet.

A recent study of the influence of fluoride in domestic water on height, weight and fracture experience affords important data on this question.³ Taking advantage of the vast quantity of statistics accumulated in connection with the induction of young men into the armed forces, McClure compared the data for height and weight of 2,529 selectees, some from areas where the drinking water contains fluorine and some from areas whose water was free from fluorine or below the known level of dental fluorosis. In like manner 1,458 high school boys were studied. In addition, statements were obtained from each subject regarding bone fractures such as are encountered in various sports. After correlating the data on height, body weight and fractures with the broad spread of concentrations of fluorine in the water drunk by the subjects, the conclusion was reached that fluorine in the water has no effect on height or weight and appears to exert no serious impairment in skeletal performance such as might be manifest in broken bones.

2. Cowie, A. T.: Fracture of the Pelvic Bones in Bovines Implanted with Tablets of Synthetic Estrogens, *J. Endocrinol.* 4: 19 (July) 1944.

3. Folley, S. J., and Malpress, F. H.: The Chemical Composition of Bovine Mammary Secretions Induced by the Subcutaneous Implantation or Oral Administration of Synthetic Estrogens, *J. Endocrinol.* 4: 37 (July) 1944.

4. Hammond, J., Jr., and Day, F. T.: Estrogen Treatment of Cattle: Induced Lactation and Other Effects, *J. Endocrinol.* 4: 53 (July) 1944.

1. Dean, H. T.; Dixon, R. M., and Cohen, C.: *Pub. Health Rep.* 50: 424 (March 29) 1935.

2. Dean, H. T.; Arnold, F. A., Jr., and Elvove, E.: *Pub. Health Rep.* 57: 1155 (Aug. 7) 1942.

3. McClure, F. J.: *Pub. Health Rep.* 59: 1543 (Dec. 1) 1944.

The urine of a large proportion of the same subjects was examined for fluoride concentration.⁴ In localities where the water was free of fluorine the average concentration in the urine is 0.3 to 0.5 part per million. With increasing amounts of fluorine in the water there occurred proportional increases in the urine. It appears from the foregoing observations that normal renal function is a safeguard against suspected toxic bone fluorosis in adult human subjects even in regions where the potable waters contain appreciable amounts of fluorine.

Current Comment

TREATMENT OF PLANT DISEASE WITH PENICILLIN

The first successful application of penicillin to phytotherapy is reported by Brown and Boyle¹ of the Agriculture Experiment Station, Tucson, Ariz. The plant disease treated by them was crown gall of *Bryophyllum*, caused by local inoculation with a pure culture of *Agrobacterium tumefaciens*. The penicillin preparation used for treatment was a crude product which assayed but 2 to 6 Oxford units per cubic centimeter. Penicillin soaked cotton was wrapped round the galls and the gall then punctured in numerous places with a sterile needle. The gall tissues began to turn brown soon after treatment. Complete destruction of the gall followed, with negligible injury to the surrounding normal plant tissues. On account of the economic loss from crown gall in the Southwest, the Arizona investigators recommend the application of penicillin therapy to set trees and nursery stock. Crude penicillin can be prepared by the Clifton² technic at a cost of about 2 cents a quart. Only a tablespoonful is required for a cure. Their findings are of suggestive clinical interest, since the crown gall bacterium is gram negative. Thus far many clinicians have assumed that all gram negative bacteria are refractory to penicillin.

EPIDEMIOLOGY OF VENEREAL DISEASES

The venereal diseases are communicable and are therefore subject to epidemiologic control. For this three general methods have been outlined recently by Gordon.¹ Where feasible the destruction or elimination of the reservoir of infection is most satisfactory; second is breaking the chain of infection at the point of transfer; finally, measures may be employed which will increase the resistance of the individual and thereby the resistance of the "herd." An adequate program for medical care of the persons suffering from either of the two most common venereal diseases, Gordon says, would effectively eliminate them, provided such facilities were known to all persons, that those who needed them were conscious of the need

and that the facilities would be used voluntarily. Unfortunately the mere providing of medical care is not enough. The community as a whole, Gordon says, must be responsible for education of the individual concerning the venereal diseases, for epidemiologic studies necessary to define the extent of the problem and to expose the points most open to attack, and for providing those control measures which can function only as a community responsibility. Case finding by investigation of contacts has proved highly successful whenever trained personnel are available, even in the face of great practical difficulties. Quarantine of known contacts is a recognized method which is practical in dealing with the infectious prostitute but not with the casual source of infection. Other methods of epidemiologic control consist of house to house canvass, the periodic physical examination and notification by physicians to health agencies as is done with other communicable diseases. The epidemiologic approach to the control of the venereal diseases is not new, but the experience gained with the armed forces and the communities in which large army camps have been located, both in this country and abroad, should prove of great value after the war as well as now.

CONTROL OF ALLOXAN DIABETES IN RATS BY HIGH FAT DIET

In rats and other animals diabetes can be produced by the injection of alloxan and its action on the pancreatic islets.¹ Closely related to the purines, alloxan may be formed in the course of metabolism in the body and possibly may be a cause of human diabetes. That alloxan is of great value for the experimental study of diabetes is illustrated by the work of Burn, Lewis and Kelsey² of the department of pharmacology at Oxford University on the control of alloxan diabetes in rats by a high fat diet. These investigators made rats diabetic by injecting alloxan and then found that on a high fat diet "the glycosuria disappeared and remained absent until the normal diet was resumed." Abrupt change to a fat diet was accompanied by some ketonuria, but on a gradual increase of fat in the diet the glycosuria disappeared without the development of any ketonuria. "After successive periods of high fat diet the glycosuria seen on return to the normal diet steadily diminished." In other words, alloxan diabetes in rats can be controlled by diet. In the treatment of human diabetes the possibility of ketonuria and coma prevents the use of high fat diets, which in fact have been recommended by Allen and others.³ Undoubtedly the results of the Oxford investigators in the dietary control of diabetes in rats will stimulate renewed interest in the dietary control of human diabetes and in the problems of ketonuria.

1. Dunn, J. Shaw, and McLetchie, N. G. B.: Experimental Alloxan Diabetes in the Rat, *Lancet* 2: 384 (Sept. 25) 1943.

2. Burn, J. H.; Lewis, T. H. C., and Kelsey, F. D.: The Dietary Control of Alloxan Diabetes in Rats, *Brit. M. J.* 2: 752 (Dec. 9) 1944.

3. Allen, F. M.: The Role of Fat in Diabetes, *Am. J. M. Sc.* 152: 313 (March) 1917. Newburgh, L. H., and Marsh, P. L.: The Use of a High Fat Diet in the Treatment of Diabetes Mellitus, *Arch. Int. Med.* 26: 647 (Dec.) 1920. Petren, K., and others: Studies in Diabetes, *J. Metabolic Research* 5: 7 (Jan.-March) 1925.

4. McClure, F. J.: *Pub. Health Rep.* 59: 1575 (Dec. 8) 1944.

1. Brown, J. G., and Boyle, A. M.: *Science* 100: 528 (Dec. 8) 1944.

2. Clifton, C. E.: *Science* 98: 69 (July 16) 1943.

1. Gordon, John E.: Control of Venereal Diseases, *Lancet* 2: 711 (Dec. 2) 1944.

MEDICINE AND THE WAR

ARMY

TEN RECEIVE AMERICAN TYPHUS COMMISSION MEDAL

Two American ambassadors, five army officers and three navy officers were recently awarded the United States of America Typhus Commission Medal in recognition of their "exceptionally meritorious service" in the control of typhus. The recipients of the awards and the citations accompanying them include: Hon. Alexander Comstock Kirk, United States ambassador to Italy, "for exceptionally meritorious service in connection with the work of the United States of America Typhus Commission. As minister to Egypt during the period from Jan. 7, 1943 to May 1, 1944 Mr. Kirk took great personal interest in the activities of the commission and constantly supported its program. His support contributed materially to the success of the commission's investigations and control of typhus fever in the Middle East."

Hon. Laurence A. Steinhardt, United States Ambassador to Turkey, "for exceptionally meritorious service in connection with the work of the United States of America Typhus Commission. During the period June 1, 1943 to May 1, 1944 Ambassador Steinhardt actively cooperated with the United States of America Typhus Commission and supported its efforts to control typhus fever in Turkey. In addition to his assistance in measures for typhus control, Mr. Steinhardt personally made possible a cooperative project with the Turkish Army Medical Department which advanced the appreciation of American medicine in Turkey and fostered scientific understanding and good will."

Capt. Thomas J. Carter, chief, Preventive Medicine Division, Bureau of Medicine and Surgery, Navy Department, Washington, D. C., "for exceptionally meritorious service in connection with the work of the United States of America Typhus Commission. In December 1942, before he was a member of the commission, Captain Carter was commended for the assistance he rendered during the organization of the first overseas movement of the commission. Since January 1943, as a member of the executive committee of the commission, he has constantly contributed sound judgment, expert professional knowledge and personal attention to the participation of the United States Navy in the activities of the commission abroad and in this country. His services have been invaluable to the operation of the commission as a whole and have contributed to the investigation and control of typhus fever." Dr. Carter graduated from Jefferson Medical College of Philadelphia in 1927 and entered the service June 27, 1927.

Col. Harry Plotz, formerly of Brooklyn, "for meritorious service in connection with the work of the United States of America Typhus Commission. Arriving at Cairo, Egypt, in January 1943, Colonel Plotz organized and directed the first laboratory provided abroad for the commission's investigation of typhus fever and for the laboratory training of Egyptian physicians. Since his return to this country he has continued to serve the commission through his capacity as chief of the Virus and Rickettsial Diseases Division of the Army Medical School. To a long and distinguished career in typhus research he has added renown by new accomplishments." Dr. Plotz graduated from Columbia University College of Physicians and Surgeons, New York, in 1913 and entered the service Jan. 10, 1941.

Lieut. Col. John C. Snyder, formerly of New York, "for exceptionally meritorious service in connection with the work of the United States of America Typhus Commission. The development of the commission's research and diagnostic laboratory at Cairo, Egypt, is largely to be attributed to the vision, devotion and energy of Lieutenant Colonel Snyder. Since early in 1943 he has devoted himself unremittingly to the laboratory and clinical investigation of typhus fever. With interests extending beyond the laboratory, he has participated in the

development and trial of promising new methods for the serum therapy and chemotherapy of typhus. He applied his expert clinical and laboratory knowledge to the actual control of typhus fever during the outbreak of the disease at Naples, where he had charge of the organization and operation of the case finding service. One of the few thoroughly qualified research workers in the field of typhus in America, Lieutenant Colonel Snyder has devoted himself untiringly to laboratory and clinical investigations which have resulted in new knowledge and increased power to control typhus fever." Dr. Snyder graduated from Harvard Medical School, Boston, in 1935 and entered the service Nov. 22, 1941.

Lieut. Comdr. William B. McAllister Jr., formerly of Cleveland Heights, Ohio, "for exceptionally meritorious service in connection with the work of the United States of America Typhus Commission. Beginning as pathologist in the first expeditionary group of the commission in 1943, Lieutenant Commander McAllister has conducted scientific investigations of typhus fever in Egypt. In addition, his surveys of the typhus situation in several Middle East and North African countries provided basic information for the operation of the commission. For more than a year he has served with remarkable success as executive officer of the section of the commission in the Middle East. In the absence of the Field director he has been the chief officer of the commission at Cairo and in that capacity has dealt with administrative problems of great complexity and importance. Through both his scientific investigations and his administrative skill, Lieutenant Commander McAllister, serving with notable loyalty and devotion to high purposes, has made an essential contribution to the commission and to the advancement of the knowledge and control of typhus fever." Dr. McAllister graduated from John Hopkins University School of Medicine, Baltimore, in 1939 and entered the service Sept. 2, 1941.

Major Charles M. Wheeler, Sanitary Corps, A. U. S., formerly of Brea, Calif., "for exceptionally meritorious service in connection with the work of the United States of America Typhus Commission. Ever since he became a member of the commission in 1943, Major Wheeler has pursued a straightforward and highly effective course in the investigation, improvement and application of delousing methods using insecticides for the control of typhus. The results of his field investigations, in conjunction with other studies, have favorably influenced the entire army program. Proceeding from field studies in Egypt, Major Wheeler had charge of a main portion of the delousing program during the fight against the epidemic of typhus at Naples. He organized this work with foresight and carried it out with characteristic efficiency. Major Wheeler has rendered distinguished practical service in the actual control of outbreaks of typhus fever. Through his tact and ability in dealing with both individuals and masses of people, and through his sound judgment, courage, tireless efforts and inspiring leadership, Major Wheeler has rendered service of the highest value to his country."

Major Theodore E. Woodward, formerly of Westminster, Md., "for exceptionally meritorious service in connection with the work of the United States of America Typhus Commission. At Casablanca, Morocco, Major Woodward, arriving with the invasion forces in 1942, instituted at once cooperative studies with French scientists at the Pasteur Institute with a view to control of the epidemic of typhus at this port and in this region. As a result, protection for American troops was enhanced. Later, as a member of the United States of America Typhus Commission, Major Woodward participated actively in the combat against typhus at Naples and in the Aden Protectorate. Finally, in a position of high responsibility he has been a representative of the commission in the European theater of opera-

tions, rendering service to military and civilian agencies before and during the invasion of Europe. Major Woodward's activities, covering a wide range of original scientific work and administration responsibilities, have been carried out with intelligence, energy, tact and devotion to the cause of protection of the military forces against typhus." Dr. Woodward graduated from the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, in 1938 and entered the service Feb. 25, 1941.

Lieut. Comdr. Andrew Yeomans, formerly of Brookline, Mass., "for exceptionally meritorious service in connection with the work of the United States of America Typhus Commission. Lieutenant Commander Yeomans, proceeding to Cairo, Egypt, in 1943 with the first overseas expedition of the commission, organized and operated the experimental hospital ward devoted to the study and treatment of patients with typhus fever. Under constant risk of infection, Lieutenant Commander Yeomans has furnished exemplary medical care for the patients in his ward. His clinical studies of metabolism in typhus fever are the basis for new concepts of the disease. His work on methods of treatment is opening up new possibilities both for chemotherapy and for serum therapy. Under the stress of the outbreak of typhus at Naples he participated in the commission's first survey of conditions there, furnishing information which hastened the control of the epidemic. Through assisting in control measures Lieutenant Commander Yeomans has helped to decrease the risk of typhus fever in relation to military operations. Through his unremitting, intelligent and penetrating clinical studies he has contributed to the alleviation of suffering from typhus." Dr. Yeomans graduated from Harvard Medical School, Boston, in 1935 and entered the service in November 1942.

Capt. Byron L. Bennett, Sanitary Corps, A. U. S., formerly of Boston, "for meritorious service in connection with the work of the United States of America Typhus Commission. Proceeding to the Middle East with the first expedition of the commission, Captain Bennett assumed charge of the technical direction of the commission's laboratory at Cairo. In spite of the handicap of limited facilities, he maintained standards of technical accuracy. Later stationed at the Army Medical School, Captain Bennett has continued to serve the commission. The results of laboratory tests and research conducted by Captain Bennett have materially aided the field studies of the several main varieties of typhus fever."

8,000 WACS FOR HOSPITALS

To meet the grave challenge of mounting casualty lists and the consequently growing shortage of army nurses, General of the Army George C. Marshall has assigned to the Women's Army Corps the recruitment and training of a sufficient number of women to form 103 WAC medical units for assignment to sixty army general hospitals in this country.

To form these WAC medical units and have all 103 of them trained and functioning by midsummer, it will be necessary to enlist approximately 6,500 to 8,000 additional Wacs for work in army hospitals. The plan calls for the recruitment by training platoons of 6,170 women by May 1 for assignment to particular army general hospitals.

An accelerated training program has been set up for those women who come into the WAC for assignment to one of the training platoons. Their period of basic military training will be shortened to four and a half weeks, their course in medical technician school to six weeks, and the final period of their training will be on the job in an army general hospital. Their applicatory training in the hospital will be divided between classroom and duty in the wards for one month after their assignments to the general hospital.

LIEUTENANT JULIUS PARKER A PRISONER OF WAR

Lieut. Julius Parker, formerly of Chattanooga, Tenn., who was reported missing in action in France in December, is now reported to be a prisoner of war in Germany. Dr. Parker graduated from the University of Tennessee College of Medicine, Memphis, in 1942 and entered the service June 2, 1943.

ARMY AWARDS AND COMMENDATIONS

Colonel Marion H. Barker

Col. Marion H. Barker, formerly of Chicago, was recently awarded the Legion of Merit "for exceptionally meritorious conduct in the performance of outstanding services in the North African Theater of Operations from Jan. 21, 1944 until July 8, 1944. Assigned to the study of infectious hepatitis, Colonel Barker devised a comprehensive and effective plan of investigation and discovered valuable new data concerning its diagnosis, progress, treatment and after-effects. By his keen scientific insight and coordinated labors he developed methods of treatment and criteria for the disposition of patients suffering from this disease which prevent undue damage and restores most of those afflicted to their normal activities as healthy individuals rather than as chronic sufferers. The fighting strength of the Army has been measurably increased by this work. The investigations conducted by Colonel Barker are among the outstanding contributions to medical science during this war and are consistent with the highest traditions of research in the Medical Corps of the Army." Dr. Barker graduated from Rush Medical College, Chicago, in 1926 and entered the service Feb. 15, 1942.

Lieutenant Colonel George S. Bozalis

Lieut. Col. George S. Bozalis, formerly of Washington, D. C., has been awarded the Bronze Star Medal and recommended for the Legion of Merit for his work while with an evacuation hospital in France. The citation sets out that the enviable accomplishments of the unit may be attributed in great measure to Lieutenant Colonel Bozalis's superior professional ability and his loyal and untiring devotion to duty during operations in France. Dr. Bozalis graduated from the University of Oklahoma School of Medicine, Oklahoma City, in 1935 and entered the service in August 1941.

Captain Francis H. Fox III

The Bronze Star Medal, for distinctive service with the U. S. Army medical corps in France, was recently awarded to Capt. Francis H. Fox, formerly of Arthur, Ill. Dr. Fox's citation stated that the award was presented for "service in connection with military operation against the enemy from Aug. 8 to Aug. 25, 1944." Dr. Fox graduated from Northwestern University Medical School, Chicago, in 1936 and entered the service March 30, 1940.

Lieutenant Colonel Russell S. Wolfe

The Air Medal was recently awarded to Lieut. Col. Russell S. Wolfe, formerly of Houston, Texas, and now 7th AAF Bomber Command flight surgeon. The presentation was made by Brig. Gen. Truman H. Landon, commanding general of the 7th AAF Bomber Command. Dr. Wolfe graduated from the University of Michigan Medical School, Ann Arbor, in 1928 and entered the service Dec. 20, 1940.

Lieutenant Colonel Robert E. Daniels

For meritorious service on the field of battle in France, Lieut. Col. Robert E. Daniels, formerly of Decatur, Ind., has been awarded the Bronze Star. Dr. Daniels has been serving overseas since November 1943 as a divisional surgeon. He graduated from Indiana University School of Medicine, Indianapolis, in 1928 and entered the service Dec. 15, 1940.

Captain Clifton Felts

Capt. Clifton Felts, formerly of Seminole, Okla., recently received a citation for "heroic and meritorious duty beyond the ordinary in action" while serving as battalion surgeon in an infantry division in Italy. Dr. Felts graduated from the University of Illinois College of Medicine, Chicago, in 1932 and entered the service June 20, 1942.

Lieutenant Colonel Charles Harold Avent

Lieut. Col. Charles Harold Avent, chief surgeon of an evacuation hospital, was recently awarded the Bronze Star for meritorious service in Belgium. Dr. Avent graduated from the University of Tennessee College of Medicine, Memphis, in 1932 and entered the service June 25, 1942.

NAVY

CHANGE IN NAVY NURSE CORPS
REGULATIONS

Vice Admiral Ross T. McIntire, Surgeon General of the Navy, recently announced a modification in Nurse Corps regulations which will permit navy nurses now in service to marry without being required to resign. Liberalization of the marriage regulation is expected to help substantially in achieving the Nurse Corps's authorized strength, since more than 80 per cent of all separations from this branch of the service have been due to the marriage bar. The Navy will continue efforts, none the less, to commission 4,000 additional nurses by June 30 in order to meet needs imposed by expanding naval operations. There is no change in present policy which disqualifies married nurses for entrance into the Nurse Corps.

NEW NAVAL HOSPITAL AT DUBLIN, GA.

An 850 bed naval hospital at Dublin, Ga., was recently commissioned and has been added to the Navy's expanding list of facilities for caring for the sick and wounded. The construction program was supervised by the Bureau of Yards and Docks under Vice Admiral Ben Moreell (CEC), U.S.N. It has been designed to permit expeditious addition of new wards, if needed. Medical, dental and Nurse Corps officers killed in action since Pearl Harbor have been accorded recognition in the naming of nine main thoroughfares laid out through the hospital reservation. Capt. A. L. Bryan (MC), U.S.N., is in command of the hospital; Capt. A. J. Delaney (MC), U.S.N., is executive officer, and Lieut. Florence Carmody (NC), U.S.N., is chief nurse.

PERMANENT NAVAL DENTAL EXHIBIT

A permanent exhibit of oral diseases and maxillofacial injuries in naval hospitals may be shown throughout the country at staff Naval Dental Corps meeting in medical department facilities and at meetings of dental societies. The exhibit was collected, designed and constructed, by Comdr. S. S. Wald (DC), U.S.N.R., at the U. S. Naval Hospital, Brooklyn, with the cooperation of Capt. G. E. Robertson (MC), U.S.N., medical officer in command. The exhibit consists of transparency boxes measuring 5 feet high and 3 feet wide. On the inclined sides are mounted series of 5 by 7 inch pictures in color taken by Commander Wald which illustrate procedures used in treating oral diseases and maxillofacial injuries.

BRONZE TABLET IN MEMORY OF COM-
MANDER ERIC LILJENCRA NTZ

A bronze tablet commemorating the service and untimely death of Commander Eric Liljencrantz, Medical Corps, U. S. Naval Reserve, has been set up in an appropriate place at the Naval School of Aviation Medicine, U. S. Naval Air Station, Pensacola, Fla. Dr. Liljencrantz graduated from Stanford University Medical School, San Francisco, in 1929. He lost his life in an airplane crash at the U. S. Naval Air Station, Pensacola, Fla., Nov. 5, 1942, while studying the physiologic effects of acceleration.

CAPTAIN HAKANSSON NAMED TO
MEDICAL GROUP

Capt. Erik G. Hakansson (MC), U.S.N., medical officer in command of the Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md., has been named to the body of medical authorities serving on the special medical advisory group to the Veterans Administration.

NAMED PERSONNEL OFFICER OF BUMED

Capt. William Walter Hargrave (MC), U.S.N., has been named personnel officer of the Bureau of Medicine and Surgery to fill the vacancy created by the appointment of Rear Admiral W. J. C. Agnew (MC), U.S.N., to the post of assistant to the chief of the bureau.

CIVIL READJUSTMENT OFFICERS
GRADUATE

A third graduating class trained at the National Naval Medical Center in Bethesda, Md., has increased to 66 the total number of civil readjustment officers made available to the rehabilitation program in naval hospitals. The civil readjustment officers serve in all hospitals, except two where special conditions prevail, as advisers to naval and marine personnel in matters concerning their rights and benefits under existing servicemen's legislation.

NEW PLASTIC ARM SPLINT
IN USE BY NAVY

A new plastic arm splint, devised by two naval medical officers to immobilize arm fractures rapidly, is now being shipped from the naval supply depot at Brooklyn to advanced overseas areas for utilization in the evacuation of battle casualties. The splint, made of a light, strong phenolic fabric board which is resistant to moisture, was designed by Capt. French R. Moore (MC), U.S.N., head of the Combat Medical Planning Branch of the Bureau of Medicine, and Comdr. P. J. O'Donnell (MC), U.S.N.R. With the new type splint all arm and forearm fractures may be quickly immobilized, thus speeding up preparations for evacuating cases of this kind to rear area hospitals.

NAVY AWARDS AND COMMENDATIONS

Lieutenant Commander J. Frederic Dreyer

Lieut. Comdr. J. Frederic Dreyer, formerly of Allentown, Pa., was recently awarded the Bronze Star Medal for meritorious performance of duty in the assault landings at the Bay of the Seine, France, last June 6. The citation read, in part, "The courage, decisive action and devotion to duty displayed by Lieutenant Commander Dreyer on this occasion reflect great credit on himself and the United States naval service." Lieutenant Commander Dreyer is a veteran of Allied invasions of North Africa, Sicily, Italy, Normandy and southern France and also served as censor and senior medical officer of an American amphibious command flagship which saw action in the Mediterranean theater. He graduated from the University of Toronto Faculty of Medicine in 1926 and enlisted in the Medical Corps of the U. S. Navy in September 1942.

Lieutenant Paul H. Koren

The Silver Star was recently presented to Lieut. Paul H. Koren, formerly of Scarsdale, N. Y., "for conspicuous gallantry and intrepidity as the medical officer of a beach battalion during the invasion of France on June 6, 1944. Immediately on landing on the beach at H plus thirty-two minutes, Lieutenant (then Lieutenant, Junior Grade) Koren unhesitatingly took his station at the water's edge and at constant risk of his life exposed himself to terrific German machine gun, rifle and artillery fire to minister to the wounded, carrying on his task intirringly throughout the day. His gallant spirit of self sacrifice and inspiring devotion to duty in the face of grave peril were in keeping with the highest traditions of the United States Naval Service." Dr. Koren graduated from New York Medical College, Flower and Fifth Avenue Hospital, in 1942 and entered the service in June 1943.

Lieutenant John Edward Annitto

The Legion of Merit was recently awarded to Lieut. John E. Annitto, formerly of Jersey City. The citation read "for exceptionally meritorious conduct in the performance of outstanding services to the government of the United States as medical officer assigned to an attack group during the amphibious assault on the west coast of Italy. While proceeding by small boat to a ship in the Gulf of Salerno, Lieutenant (then Lieutenant, Junior Grade) Annitto observed a nearby craft severely damaged by a direct hit from an enemy shore battery and immediately ordered his boat alongside the stricken vessel.

Although the ship was still under heavy shellfire, he went aboard and rendered first aid, continuing his work with calm courage and skilful efficiency despite the extreme danger of his exposed position. By his initiative, professional ability and unswerving devotion to duty he undoubtedly saved many lives which otherwise might have been lost." Dr. Annitto graduated from New York Medical College, Flower and Fifth Avenue Hospitals, New York, in 1937 and entered the service in September 1942.

Lieutenant Commander Carver G. Walcott

The Legion of Merit was recently presented to Lieut. Comdr. Carver G. Walcott, formerly of Fenton, Mich. The citation read "for exceptionally meritorious conduct in the performance of outstanding services to the government of the United States as medical officer attached to the U. S. S. *Biscayne* during the amphibious assault on Italy in the Gulf of Salerno, Sept. 9 to 15, 1943. By his sound judgment and expert professional knowledge Lieutenant Commander (then Lieutenant) Walcott skilfully treated survivors of nearby stricken vessels despite the danger imposed by devastating enemy bombing attacks. Working tirelessly for long periods of time aboard a small ship with

limited facilities, he effectively administered aid to a large number of casualties and, by his competent handling of a difficult task, contributed to the saving of many lives." Dr. Walcott graduated from the University of Michigan Medical School, Ann Arbor, in 1934 and entered the service June 1, 1942.

Lieutenant Frederick C. Gevalt Jr.

Lieut. Frederick C. Gevalt Jr., formerly of Boston, was the recipient of the Bronze Star recently. The citation read "for meritorious performance of duty as a company medical officer of the Second Beach Battalion during the assault on France, June 6, 1944. Lieutenant Gevalt, under heavy gunfire, repeatedly exposed himself to administer to the wounded and, without regard for his personal safety, and although wounded himself, supervised the evacuation of wounded from his section of the beach. His courage and devotion to duty were an inspiration to all officers and men having contact with him. The skill and professional ability displayed by Lieutenant Gevalt under most trying conditions were in keeping with the best traditions of the United States Naval Service." Dr. Gevalt graduated from Columbia University College of Physicians and Surgeons, New York, in 1940 and entered the service Feb. 22, 1943.

MISCELLANEOUS

WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

Station Hospital, Camp Claiborne, Alexandria, La.: Evaluation of Cardiac Disease, Dr. Willard With, February 26; Psychosomatic Medicine, Dr. Theodore Watters, February 26; Internal Derangement of the Knee, Lieut. Col. Samuel Terhune, February 26; Amputations, Dr. Rawley Penick, February 26.

U. S. Naval Hospital and LaGarde General Hospital, New Orleans (joint meeting): Internal and External Red Blood Cell Therapy, Dr. Walter Davenport, March 7; Psychosomatic Diagnosis in the Army, Major H. H. Leet and Major Paul Rosenfels, March 7; Radiation Therapy of Tumors, Dr. Manuel Garcia, March 7; Carcinoma of the Colon, Dr. James Rives, March 7.

Station Hospital, Rosecrans Field, St. Joseph, Mo.: Gastrointestinal Diseases, Dr. R. C. Davis, March 8; X-Ray Diagnosis, Dr. Ira H. Lockwood, March 8.

Station Hospital, Camp Stoneman, Pittsburg, Calif.: New Methods of Treatment of Heart Disease, Dr. Francis Chamberlain, March 3.

Vaughan General Hospital, Hines, Ill.: Diagnostic Studies on Status Anginosus, Dr. Chauncey C. Maher, February 21.

A. A. F. Regional Hospital, March Field, Riverside, Calif.: Helminth Infections Common to the Orient, Dr. John Kessell, February 20.

Torney General Hospital, Palm Springs, Calif.: Internal Derangements of the Knee, Dr. John Wilson, February 20.

Station Hospital, Camp Cook, Calif. (afternoon meeting): Some Fundamental Considerations for the Understanding of Psychiatry, Dr. Glen E. Meyers and Comdr. Walter Rapaport, February 21.

Hoff General Hospital, Santa Barbara, Calif.: Some Fundamental Considerations for the Understanding of Psychiatry, Dr. Glen E. Meyers and Comdr. Walter Rapaport, February 21.

U. S. Naval Hospital, Camp Pendleton, Oceanside, Calif.: Some Ideas on the Diagnosis, Prognosis and Treatment of Cardiovascular Diseases, Dr. William D. Stroud, February 20.

U. S. Naval Hospital, Corona, Calif.: Some Ideas on the Diagnosis, Prognosis and Treatment of Cardiovascular Diseases, Dr. William D. Stroud, February 23.

U. S. Naval Air Training Station, San Diego, Calif.: Surgery of the Traumatic Abdomen, Comdr. Gaylord Bates and Dr. C. E. Phillips, February 23.

Birmingham General Hospital, Van Nuys, Calif.: Thoracic Surgery, Dr. John Jones and Lieut. Comdr. J. E. Dailey, February 28.

Vaughan General Hospital, Hines, Ill.: Neurocirculatory Asthenia, 1st Lieut. Lamont Schweiger, February 19; Bronchial Asthma, Capt. William Horwitz, February 20; Blood Dys-

crasias, Major R. N. Tindall, February 22; X-Ray Conference, Major V. Graham, February 22; Peptic Ulcer, Lieut. V. J. LoPiccolo, February 23; Peripheral Vascular Disease, Lieut. Lamont Schweiger, February 26; Pleurisy, Capt. William Horwitz, February 27.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in *THE JOURNAL*, February 10, page 337)

CALIFORNIA

Mount Zion Hospital, San Francisco. Capacity, 193; admissions, 5,333. Dr. J. A. Katzev, Director (resident—roentgenology, disqualified for military service).

GEORGIA

Grady Memorial Hospital, Atlanta. Capacity, 720; admissions, 14,067. Mr. Frank Wilson, Superintendent (residents—medicine, surgery, obstetrics-gynecology; women, or men disqualified for military service). St. Joseph's Infirmary, Atlanta. Capacity, 158; admissions, 5,827. Sister M. Cornille, Superintendent (interns and residents disqualified for military service or applicants from Latin American schools).

ILLINOIS

Hospital of St. Anthony de Padua, Chicago. Capacity, 245; admissions, 6,563. Sister M. Johanne, Superintendent (interns).

IOWA

Iowa Lutheran Hospital, Des Moines. Capacity, 155; admissions, 4,564. Miss Clara Hendrickson, Superintendent (2 interns, July 1).

MISSOURI

Jewish Hospital, St. Louis. Capacity, 303; admissions, 6,704. Miss Florence King, Administrator (residence—surgery, obstetrics-gynecology, disqualified for military service). St. Louis City Hospital, St. Louis. Capacity, 1,104; admissions, 14,098. Dr. Leo J. Wade, Medical Director (3 interns, July 1).

NEW YORK

St. John's Riverside Hospital, Yonkers. Capacity, 220; admissions, 4,429. Mr. S. Chester Fazio, Superintendent (interns).

OREGON

St. Vincent's Hospital, Portland. Capacity, 425; admissions, 10,739. Sister Rose Imelda, R.N., Superintendent (residents—pathology, radiology, disqualified for military service).

RHODE ISLAND

Memorial Hospital, Pawtucket. Capacity, 202; admissions, 4,891. Mr. Walter E. Wright, Superintendent (interns, July 1).

WISCONSIN

Evangelical Deaconess Hospital, Milwaukee. Capacity, 170; admissions, 5,465. Rev. J. P. Meyer, Superintendent (interns).

ORGANIZATION SECTION

HEALTH INSURANCE LEGISLATION IN CALIFORNIA

Analysis of Health Insurance Proposals Before the 1945 California Legislature Prepared by the California Medical Association

Introductory Note.—There are at least thirteen bills before the 1945 legislature on the subjects of state medicine, compulsory health insurance and voluntary health insurance. (This analysis covers bills introduced before Jan. 27, 1945.)

I. COMPULSORY TAX INCREASE BILLS

A.—A. B. 449. Sponsor, the C. I. O. Major features:

1. *Administration.*—Creates new bureau (California Health Insurance Commission) with power to manage and regulate the compulsory health plan. California Health Insurance Commission to consist of nine persons appointed by governor, two from labor, two from management, two from agriculture, one from the medical profession, one full time professor in a medical school, and one from the general public (practicing physicians have one member out of nine). An executive director (who must not be a doctor or dentist) to have full power to manage the day by day operations, his salary to be \$15,000 a year. A medical director to be appointed (salary \$12,000 a year) but his powers, if any, are not specified.

A medical advisory council (two M.D.s, one osteopath, one dentist, one professor, one hospital manager, one pharmacist, a director of public health and one representative of "group practice of medicine") to be appointed by governor. Its powers limited to "advising" the medical director concerning professional and hospital standards of service.

The state to be divided into "areas," each area to have a medical director and an area medical council with power to "advise" on professional matters. The commission may establish "appeal bodies" to hear and determine all disputes subject to final appeal to the commission.

2. *Financing.*—Costs are financed by (a) a payroll tax of 1.5 per cent on employers and 1.5 per cent on employees, (b) appropriations from general taxes (for administration expenses) and (c) payments from counties, etc., to cover cost of indigent care. Political subdivisions must pay such amounts as the commission fixes, but not more than 3 per cent of average wages.

3. *Persons Covered.*—All employees who are now subject to the Unemployment Insurance Act, their wives and children under 18; also all indigents (including old age pensioners); also all state and county employees, their wives and children under 18.

4. *Benefits.*—Medical care, as follows: (a) "general practitioner" services including "preventive," diagnostic and therapeutic treatment and care and physical examinations, (b) "special medical care," i. e., services requiring unusual professional skill or experience by "a legally qualified physician or dentist who is professionally capable of rendering such service" (N. B. Presumably, the Medical Director decides what doctors are specialists and in what specialties), (c) laboratory services including x-ray, clinical laboratory studies and physical therapy, (d) hospital care up to twenty-one days, and (e) dental and nursing care to the extent the Commission finds feasible.

5. *Eligible Purveyors of Benefits.*—(a) All M.D.s, (b) all osteopathic physicians and surgeons, (c) all dentists, (d) such hospitals as are approved by the Commission, (e) all group clinics composed of M.D.s, and (f) all medical school faculty members.

6. *Method of Paying for Benefits.*—All "general practitioner" services are paid on a capitation basis (i. e., each person selects a doctor and the doctor is then paid x dollars a year for each person selecting him, irrespective of the work, if any, done in such year). "Specialist" services and laboratory services will

be paid on a fee schedule. The fee schedule need not be uniform throughout the state.

7. *Effective Dates.*—(a) tax payments, July 1, 1945; (b) benefits, July 1, 1945.

8. *Exemptions.*—None.

B.—A. B. 800. Sponsor, Governor Warren. Major features:

1. *Administration.*—Creates a new state bureau, the California Health Service Authority, with power to operate, manage and regulate a compulsory health insurance plan, subject to the right of the governor to veto or suspend acts of the Authority, the Authority to consist of eleven members and a manager, all appointed by the governor. The eleven members of the Authority shall include three persons from management, three from labor, two members of the medical profession, one physician experienced in hospital management, one dentist and the director of public health. The executive head of the Authority is the manager (salary \$12,000 a year), who is not required to be a physician. The manager is directed to administer the act and to employ such personnel as may be necessary.

2. *Financing.*—Costs are financed by (a) a payroll tax of 1.5 per cent on employers and 1.5 per cent on employees and (b) such amount from the general funds of the state as may be necessary. (Bill states that "the faith and credit of the state are hereby pledged to assure the operation of the . . . system until . . . June 30, 1949.")

3. *Persons Covered.*—All employees who are now subject to the Unemployment Insurance Act, their wives and children under 18; also included are all state, county and municipal employees and their wives and children under 18.

4. *Benefits.*—Medical care as follows: "general practitioner" services including "preventive, diagnostic, therapeutic or other medical treatment or care"; "specialist" services in addition to those of the general practitioner, laboratory and x-ray services, hospital care up to twenty-one days, drugs and medicines, dental services "for the extraction of teeth and for the treatment of acute infections of the teeth, gums and alveolar processes and the bone adjacent thereto, or fractures of the jaws." Additional services may be provided by the Authority from time to time.

5. *Eligible Purveyors of Benefits.*—(a) All M.D.s, (b) all osteopathic physicians and surgeons, (c) all dentists, (d) all optometrists and (e) such hospitals as are approved by the Authority and meet the standards prescribed by the Authority.

6. *Method of Paying for Benefits.*—All services of doctors of medicine, osteopaths, dentists and optometrists will be paid for in accordance with a fee schedule adopted by the Authority. One section of the bill guarantees each person covered the right of free choice from among such physicians, dentists and optometrists as register for services under the act. The Authority may prescribe any fee schedule that it desires, and the fees need not be uniform throughout the state.

7. *Effective Dates.*—(a) Tax payments commence July 1, 1946, (b) benefits commence Jan. 1, 1947. It is provided, however, that the governor may delay the effective dates for not more than one year if the United States is still at war on April 1, 1946; also, if the bill should pass the legislature and be subject to a referendum, the effective dates are automatically postponed for one year.

8. *Exemptions.*—(a) Religious: All people who depend for healing on prayer are exempt both from the benefits and from the payroll taxes (the employer of a religious objector must still pay his 1.5 per cent).

(b) Employees leaving the state: Any employee who leaves the state and has paid into the fund an amount less than sufficient to make him eligible for benefits (the minimum is a wage of \$300 a quarter for six months) is entitled to a refund of all taxes paid. (N. B. This is a most amazing principle for a pooled fund insurance scheme.)

(c) Employer-operated medical plans: Industrial medical plans owned and operated by an employer may be exempted from both the benefits and the tax by contracting with the manager of the Authority to continue such industrial plan in existence.

(d) Railroad employees: Both railroad and maritime employees are exempted from the definition of the term "employment" and therefore apparently are not entitled to any benefits under the bill.

9. *Miscellaneous.*—(a) Employee Health Plans: It is made a misdemeanor for any employer to require membership in any health plan as a condition of employment.

(b) Control over Beneficial Standards: The bill permits California Health Service Authority to expel any registered physician who rebates fees, seriously neglects the welfare of the patient or intentionally violates any rule or regulation of the Authority.

(c) Penalties: It is a misdemeanor to violate any provision of the act or of the regulations thereunder or to fail to make full reports to the Authority.

C.—A. B. 1414. Sponsor not known, but the bill is identical with Governor Olson's 1939 compulsory health insurance bill. Major features:

1. *Administration.*—Adds a Division of Medical Service to the Department of Employment. Provides for a medical director as the chief of the division, the medical director being charged with the administration of the professional phases of the plan. Otherwise the present California Unemployment Commission is given full power to administer the so-called "social insurance benefits." The bill is in the form of an amendment to the Unemployment Relief Act and hence utilizes the existence of the Unemployment Commission as the administrative body.

2. *Financing.*—Proposes a 1 per cent tax on employers and a 1 per cent tax on employees and provides for a contribution from the general funds of the state equal to 1 per cent of all wages paid to the state.

3. *Persons Covered.*—All employees now subject to the Unemployment Insurance Act and not now earning more than \$3,000 a year and their wives and children under 21.

4. *Benefits.*—Medical benefits include the services of general practitioners, the services of specialists, laboratory and x-ray services, hospitalization, nursing services, drugs and medicines, and dental services as follows: extraction of teeth, treatment of osteomyelitis of the jaw, trench mouth and jaw fractures, and optometric services. In addition to the medical benefits the bill also provides for cash sickness payments to employed persons when ill or injured, these payments to be made out of the Unemployment Fund and to be equal in amount to the present unemployment benefits.

5. *Eligible Purveyors of Benefits.*—All M.D.s, all osteopathic physicians and surgeons, licensed optometrists, licensed dentists and approved hospitals.

6. *Method of Paying for Benefits.*—General practitioners to be paid on the capitation system; specialists, dentists, optometrists, x-ray and laboratory services and hospitalization to be paid under a fee schedule, the fee schedule to be fixed by the California Employment Stabilization Commission and the medical director. Various provisions of the bill permit the state to contract with closed panel group clinics for the purpose of permitting such clinics to render all of the medical services provided in the bill on a fixed amount per annum, closed panel group clinics being expressly incorporated by various sections of the bill.

D.—S. B. 218. Sponsor, the California Farm Bureau. Major features:

This bill relates only to county hospitals. Its purpose is to open all county hospitals to all residents of each county, regardless of income. The bill divides all citizens into three classes:

A, indigents; B, poor but able to pay some costs; C, able to pay full costs of medical care and hospitalization. Classification into A, B or C is determined by reference to each person's income, amount of property owned and wealth of near relatives legally liable for his or her support.

Those in class A are entitled to hospitalization and medical care at the expense of the county.

Those in class B are entitled to medical care and hospitalization at the expense of the county but are required to contribute to the county such portion of such expense as they are able to pay.

Those in class C are entitled to hospitalization in the county hospital but must pay the full cost of such hospitalization. People in class C are not entitled to any medical care from the county but are privileged to have their own physicians or dentists treat them in the county hospital while hospitalized.

As to people in class C, physicians and dentists are permitted to charge private fees. As to those in class A and class B, medical care is rendered by the county hospital staff and no charge may be made.

All costs of operating the county hospital constitute a charge against county taxes. The bill also provides that in each county there shall be a Board of Public Welfare of seven persons, two from agriculture, two from medicine, one from osteopathy and two from business and labor groups. Classification of patients admitted into the county hospital into A, B or C would be made by a medical social service investigating agency acting under the jurisdiction of the Board of Supervisors, provided that any person not satisfied with the medical social service classification may appeal to the county Board of Public Welfare.

In substance, this bill would change county hospitals from charity institutions to a combination charity hospital and private hospital.

II. VOLUNTARY BILLS

A.—A. B. 1200. Sponsor, the California Medical Association. Major features:

1. *Administration.*—As this bill proposes aid and assistance to existing voluntary nonprofit plans, there is no new bureau created and no additional governmental employees contemplated. The bill is in the form of an amendment to the Unemployment Insurance Act, and the little administration that is necessary will be done by the existing Employment Stabilization Commission.

2. *Financing.*—Again, as this is a voluntary plan, no new taxes are contemplated. The existing tax structure of the Unemployment Insurance Act, which has proved to be more than necessary for unemployment relief, will be utilized under this bill for assisting in spreading the cost of medical care.

3. *Benefits.*—(a) Voluntary nonprofit medical and hospital plans: To encourage people to enroll in these plans, of which there are many in the state, the bill cuts the employee's 1 per cent payroll contribution to the Unemployment Fund in half; thus an employee who enrolls himself and his family in a nonprofit medical and hospital plan would thereafter be taxed $\frac{1}{2}$ of 1 per cent instead of 1 per cent by the state unemployment act. If he earns \$200 a month, this means a tax saving of \$1, which is automatically applied against his monthly dues to the voluntary plan. In the average case this would amount to about one fourth to one third of the total dues charged by existing voluntary plans. This can be done within the existing tax structure. Using 1944 as an example, if this bill had been in effect the $\frac{1}{2}$ of 1 per cent reduction in employees' unemployment contributions would have cost the fund about \$25,000,000. In all years since 1936 the costs of the Unemployment Fund have been sufficiently under the tax receipts so that a reduction of $\frac{1}{2}$ of 1 per cent could have been made without jeopardizing the Unemployment Fund. In fact, California and three other states are the only ones who tax the employee anything for unemployment relief, so that we have in this state the full 1 per cent employees' tax over and above the comparable resources of the unemployment funds in forty-four of the states. This bill proposes to make some use of this existing excessive tax and to allow the people to get some benefit from it.

(b) Allows employers to make payroll deductions for all employees for payment of dues or premiums for approved ho-

pital, medical or surgical prepayment plans. Exceptions under this rule would be made for employees who state in writing their objections to inclusion in such plans. This feature follows the election procedure of the National Labor Relations Act, providing that the majority of employees may bind all employees in joining approved nonprofit plans.

(c) Provides that regular unemployment benefits will be paid to employees who are hospitalized for illness and who are not covered for hospitalization by an approved nonprofit plan. A preliminary actuarial study indicates that this provision of the bill will cost the fund not more than \$2,500,000 a year, based on the incidents of hospitalization and the number of people covered. Actually it will probably cost the fund less than \$2,500,000, because most employees will join voluntary plans to get the tax reduction provided in another part of the bill, and as to such employees sickness benefits are not payable as they are already covered; \$2,500,000 is therefore the maximum cost. In 1944 the unemployment tax collections totaled about \$170,000,000, so that \$2,500,000 is less than 2 per cent of the annual funds available.

4. *Approved Voluntary Plans.*—The bill provides the following types of voluntary plans approved for the purpose of qualifying persons who enroll for the benefits that have been set forth: (a) California Physicians' Service, or any comparable plan formed by the osteopathic physicians and surgeons or the dentists; (b) The Blue Cross plans, i. e., nonprofit hospitalization plans operated by the hospitals, and (c) all insurance company medical, surgical and hospital reimbursement policies.

Each and all of the foregoing types of plan qualify, and people who join them will, under the bill, be entitled to the tax reduction as described. In order to prevent fraudulent plans from springing into existence it was necessary to describe the type of voluntary plan that meets with the state's approval. Descriptions used in the bill are sufficiently broad to cover all types of plan that provide free choice of physician and which give to the public reasonable value for their money paid.

5. *Miscellaneous.*—The incentives that are given to existing private enterprise by this bill will result, if the bill becomes law, in the bulk of the low and middle income population of the state enrolling in voluntary plans. This can all be accomplished without increasing the tax structure and further penalizing California business and industry. At the same time, because private enterprise always operates more efficiently than governmental monopolistic bureaus, the people will get more value for each dollar paid than they ever will through a compulsory plan. B.—S. B. 219. Sponsor, the California Farm Bureau. Major features:

The purpose of this bill is to remove all doubts as to the legality of closed panel group or contract medical practice. Under the bill, any group of physicians or any corporation may enter into contracts with subscribers for the furnishing of health services on a prepayment basis if such group of physicians or corporations has first obtained from the State Department of Public Health a license authorizing it to transact a prepayment health service plan. The bill prohibits operations by any prepayment plan that does not qualify for a license from the Department of Public Health. There is no requirement in the bill that health service associations offer free choice of physician or hospital; on the contrary, the bill contemplates closed panel or salaried medical staffs to render services to the people who join health service associations. It is provided that associations formed under the bill shall not be subject to the insurance laws of the state. It is also provided that health service associations may be formed either by members of the general public for the purpose of contracting with physicians or by groups of physicians for the purpose of contracting with members of the public.

It is not clear whether the bill, if enacted into law, would affect California Physicians' Service and existing insurance company reimbursement contracts. It is clear that the bill, if enacted, will legalize operations of closed panel clinics such as Ross-Loos, Chartres-Martin, Stowe-Lipsett and Fred W. Callison and Staff.

Medical Legislation

MEDICAL BILLS IN CONGRESS

Change in Status.—H. R. 1984 has passed the House of Representatives, a bill making appropriations for the executive office and sundry independent executive bureaus, boards, commissions and offices, for the fiscal year ending June 30, 1946. This bill, among other things, proposes an appropriation of \$2,707,119,250 for the Veterans Administration, representing an increase over appropriations made for 1945 of \$1,436,707,185. Of the total proposed to be appropriated in 1946, \$227,675,000 will be used for the administration, medical, hospital and domiciliary services and \$84,500,000 for new hospital and domiciliary facilities.

Bills Introduced.—H. R. 1415, introduced by Representative Angell, Oregon, proposes an appropriation of \$11,580,000 annually to provide for the education of children who are crippled, blind, partially seeing, deaf, hard of hearing, defective in speech, cardiopathic, tuberculous or otherwise physically handicapped and who for their education require an expenditure of money in excess of the cost of educating physically normal children. H. R. 1923, introduced by Representative Morrison, Louisiana, proposes to eliminate financial inability to defray expenses of hospital treatment or domiciliary care as a prerequisite to a veteran obtaining such treatment or care in a Veterans Administration facility. H. R. 1998, introduced by Representative Hoeh, Pennsylvania, proposes to establish a chiropody corps in the Medical Corps of the Army and to establish a chiropody reserve corps. H. R. 1999, introduced by Representative King, California, proposes to establish a joint committee to select a suitable medal or award to be bestowed on members of selective service local boards. H. R. 2020, introduced by Representative Voorhis, California, proposes to amend title X of the Social Security Act to provide additional benefits for the blind. H. R. 2045, introduced by Representative Hartley, New Jersey, proposes an appropriation of \$25,000,000 for the fiscal year beginning July 1, 1945 to aid the several states and territories in providing a program of physical fitness activities, to be promoted by the United States Commission for the Promotion of Physical Fitness to be created by the bill. S. 436, introduced by Senator Thomas, Oklahoma, proposes to equalize state old age assistance payments and to provide burial allowances under title I of the Social Security Act.

DISTRICT OF COLUMBIA

Bill Introduced.—H. R. 1997, introduced by Representative Hebert, Louisiana, proposes to regulate the practice of optometry in the District of Columbia, defined as "the measurement and correction of refractive and muscular errors of the eye by any method not including the use of drugs and not including surgical procedures such as cutting or actual manipulation of the eyeball, but including the use of optical appliances for diagnosis or correction of such refractive and muscular errors."

STATE LEGISLATION

Arizona

Bills Introduced.—S. 43 and S. 68, to amend the basic science act, propose to authorize the issuance without examination of a certificate of registration in the basic sciences to any person presenting evidence satisfactory to the board of basic science examiners that he has received a certificate of registration, or its equivalent, in the basic sciences in a state in which the requirements therefor are at least equal to those in force in Arizona at that time. S. 55 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a physician's certificate, based on standard serologic tests for venereal disease, that the party either is not infected with venereal disease or, if so infected, is not in a state which may become communicable to the marital partner.

Arkansas

Bill Introduced.—H. 130 proposes to require any person who undertakes to care for a pregnant woman to take or cause to be taken a sample of her venous blood at the time of first examination and to subject that sample to an approved serologic test for syphilis.

California

Bills Introduced.—S. 500 proposes a system of compulsory state health insurance. S. 653 proposes to direct the state department of public health to develop a program for the collection, processing and distribution of human whole blood, blood plasma and products derived from human blood. S. 699 proposes to authorize the admittance of pay patients to county hospitals. A. 1089, to amend the medical practice act, proposes that, of the ten members of the board of medical examiners, two be drugless licentiates and two be chiroprodists.

Colorado

Bills Introduced.—S. 303 proposes to authorize the sexual sterilization of certain insane, feeble-minded or epileptic inmates of state institutions. S. 457 proposes to authorize licensed chiropractors to execute death certificates.

Georgia

Bill Introduced.—H. 272 proposes to enact a separate naturopathic practice act and to create an independent board of naturopathic examiners to examine and license applicants for licenses to practice naturopathy as defined in the bill.

Idaho

Bill Introduced.—S. 8 proposes to enact a separate naturopathic practice act and to create an independent board of naturopathic examiners to examine and license applicants for licenses to practice naturopathy as defined in the bill.

Indiana

Bills Introduced.—S. J. R. 7 seeks to create a joint senate and house committee to ascertain if the Indiana Medical School cannot graduate each year more students. S. 181 proposes to enact a separate chiropractic practice act and to create an independent board of examiners to examine and license applicants for licenses to practice chiropractic, which is defined as "a system of locating and correcting any interference with normal nerve transmission and expression by the employment of drugless methods."

Kansas

Bills Introduced.—H. 90 proposes to authorize the formation and operation of nonprofit corporations to operate medical service plans. H. 95 proposes a complete revision of the medical practice act. Among other things, it proposes to grant to licensed osteopaths the right to be given by the board of medical examiners the same examination as that given nonsectarian applicants and if successful in passing those examinations to be granted licenses to practice without restriction.

Maine

Bill Introduced.—H. 648, to amend the workmen's compensation act, proposes among other things to make compensable "a personal injury, disease or occupational disability arising out of and in the course of his employment."

Massachusetts

Bills Introduced.—H. 757 proposes that no persons be required to submit to vaccination or inoculation of any kind or to subject their minor children or wards to any medication, vaccination or inoculation against their will as a condition precedent to admission to or attendance at any public school or other institution. H. 756 proposes to prohibit a physician performing any surgical operation in a hospital supported in whole or in part by public funds or contributions to charge more than \$150 for his services in connection with that operation. H. 755, to amend the medical practice act, proposes to repeal chapter 247 of the laws of 1936, which in effect raised the educational requirements by limiting eligible applicants for licensure after examination to graduates of legally chartered medical colleges approved by an approving authority set up by the act.

Minnesota

Bill Introduced.—S. 308 proposes to authorize the organization of nonprofit corporations to operate medical service plans.

Montana

Bills Introduced.—H. 188 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a physician's certificate, based on physical examination and standard serologic tests, that the party either is not infected with syphilis or, if so infected, is not in a stage of the disease which is or may become communicable to the prospective marital partner. H. 189 proposes to require a physician or other person attending a pregnant woman for conditions relating to pregnancy to take or cause to be taken a sample of her blood for submission to an approved laboratory for a standard serologic test for syphilis.

New Jersey

Bills Introduced.—S. 11 proposes to authorize a judge in a criminal cause to order any person appearing before him, if he has reasonable grounds for suspecting the presence of syphilis in the party, to submit to examination for the discovery of syphilis and to require the party to submit to treatment therefor. S. 12 proposes that any migrant laborer who cannot produce satisfactory evidence of examination for venereal disease having been performed on him within ninety days prior to entry to New Jersey to submit within thirty days after such entry to such examination as may be prescribed by the state department of health. S. 27 proposes to enact a system of cash sickness compensation payable to persons unable by reason of sickness to work.

New Mexico

Bill Introduced.—H. 81 proposes to enact a separate naturopathic practice act and to create an independent board to examine and license applicants for licenses to practice naturopathy. Such applicants are to be exempt from the provisions of the state basic science act.

North Dakota

Bills Introduced.—H. 90 proposes to prohibit the operation of a hospital without a license from the state department of health. S. 115 proposes to establish a North Dakota state medical center at the University of North Dakota, the purpose of which is to provide facilities for the coordination, improvement, expansion and unification of health and welfare activities of the state and its agencies and political subdivisions and private medical practitioners.

Ohio

Bill Introduced.—H. 62 proposes so to amend the medical practice act as to exempt from its provisions "ministering to human ills through prayer or spiritual means alone in accordance with the tenets or teachings of any religious denomination by a member in good standing of such denomination."

Oklahoma

Bill Introduced.—S. 54 proposes to enact a venereal disease control law under the provisions of which any physician diagnosing or treating a case of venereal disease is to be required to report the facts to stated health authorities.

South Carolina

Bill Introduced.—S. 101 proposes to require every physician attending a pregnant woman for a condition relating to pregnancy to take or cause to be taken a sample of her blood at the time of first examination and to submit that sample to an approved laboratory for a standard serologic test for syphilis.

Tennessee

Bills Introduced.—S. 239 and H. 340, to amend the naturopathic practice act, proposes that nothing in that act shall permit a naturopath to use "powerful and dangerous drugs, such as narcotics, anesthetics, sedatives, sulfa drugs and other toxic drugs and biologicals, or powerful physical agents, such as x-ray therapy."

Texas

Bills Introduced.—H. 29, to amend the medical practice act, proposes that a chiropractor engaged in palpating, analyzing and adjusting the articulations of the human spinal column by

hand only shall not be regarded as practicing medicine within the meaning of the medical practice act. H. 82 proposes to enact a separate naturopathic practice act and to create an independent board of examiners to examine and license applicants for licenses to practice naturopathy. H. 93 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a physician's certificate, based on standard serologic tests for venereal diseases, that the party either is not infected with a venereal disease or, if so infected, is not in a state which may become communicable to the marital partner. H. 97, to amend the medical practice act, proposes that nothing in the act shall be construed so as to affect "naturopathic physicians, duly licensed under the laws of this state, who confine their practice to naturopathy as defined by statutes." H. 127 proposes to prohibit the operation of a convalescent home without a license from the state department of public health. S. 57 proposes to enact a separate chiropractic practice act and to create an independent board of chiropractic examiners to examine and license applicants for licenses to practice chiropractic. Chiropractic is defined as "the employment of objective or subjective means, without the use of drugs or surgery, for the purpose of ascertaining the alignment of the vertebrae of the human spine, and the practice of adjusting the vertebrae by hand to correct or remedy any defect or abnormal condition of alignment." S. 65 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a physician's certificate, based on examination and serologic test, that the party is not infected with syphilis or, if so infected, is not in a stage of that disease which is or may become communicable. S. 66 proposes to require a physician attending a pregnant woman to take or cause to be taken a specimen of her blood for a standard approved serologic test for syphilis.

Utah

Bill Passed.—H. 28 passed the house, January 22, proposing to amend the law conditioning the issuance of a license to marry on the presentation by each party to the proposed marriage of a certificate of a physician licensed in Utah that the party is free from stated venereal disease. The bill proposes that "any certificate form which has been approved by the proper authority in any state requiring premarital examinations for venereal diseases shall be accepted in this state." H. 77 proposes to prohibit an employer, as a condition of employment, from requiring any person applying for employment to obtain a physical examination unless the employer pays all costs and expenses incident to the examination.

Bill Introduced.—S. 115 proposes to enact what appears to be the uniform narcotic drug act.

Vermont

Bill Introduced.—S. 9, to amend the workmen's compensation act, proposes to require an employer to furnish an injured workman reasonable surgical, medical and nursing services and supplies during a period of sixty consecutive days commencing when medical attention is first given outside a hospital but not later than ninety days from the date of the injury and not to exceed \$75 in amount. The present law limits the time to fourteen days of disability and the amount to \$50, exclusive of hospital charges.

Washington

Bills Introduced.—S. 29 proposes to enact a separate act regulating the practice of massotherapy and to create a board of examiners in massotherapy. Massotherapy is defined as "the method, art or science of treating the human body for hygienic or remedial purposes to maintain health and to establish a normal condition of the body, and shall include all massage manipulations, passive and active remedial gymnastics and relaxing movements and manipulations with the hands or with any other agency or instrumentality designed to accomplish massage manipulations or gymnastics, or by mechanical gymnastics to promote physiological action to bring about a normal condition of health and restore bodily functions to a normal condition."

S. 77 proposes after Jan. 1, 1946 to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a certificate of a licensed physician, based on a standard serologic test made not more than thirty days prior to the issuance of the license, that the party either is not infected with syphilis or, if so infected, is not in a stage of the disease that is or may become communicable to the marital partner. H. 47 proposes to authorize the establishment of public hospital districts to operate hospital facilities to supply hospital service for district residents. The medical management of such hospitals is to be subject to the approval of the medical staffs therein, and all such hospitals are to be operated in compliance with standards set by the Council on Medical Education and Hospitals of the American Medical Association. H. 60 proposes in effect to exempt applicants for licenses to practice chiropractic from the provisions of the basic science act. H. 81 proposes that the law prohibiting the retail sale of certain hypnotic and sulfa drugs except on a prescription of a licensed physician, dentist or veterinarian shall not apply "to the sale of sulfa drugs and their compounds for external or topical application when so marked and labeled or to the sale of veterinary sulfa products and their compounds when so marked and labeled but only after each of said drugs or products has been approved as being safe for use without medical supervision by regulation of the Board of Pharmacy of this state."

West Virginia

Bill Introduced.—H. 9 proposes to require every pregnant woman to have a sample of her blood taken and submitted to the West Virginia state hygienic laboratory or other approved laboratory for the performance of a standard serologic test for syphilis. Every physician or other person engaged in attendance on a pregnant woman shall acquaint her with the requirements noted and take or cause to be taken a specimen of her blood for submission to a laboratory.

Wisconsin

Bills Introduced.—A. 49, to amend the narcotic drug act, proposes so to amend the "narcotic drug" act as to include isonip-eaine. S. 6, to amend the medical practice act, proposes to prohibit a person licensed to practice any form of the healing art to practice under any name other than that under which he was originally licensed in any instance in which practicing under the changed name operates to compete unfairly with another practitioner, to mislead the public as to identity, or otherwise to result in detriment to the profession or the public.

Woman's Auxiliary

North Carolina

The Woman's Auxiliary to the North Carolina Medical Society is stressing support of the Medical and Surgical Relief Committee of America. Mrs. John T. Saunders, president, suggested that kits be given in memory of persons lost in the service. The auxiliary is still working on kits for the amphibious forces.

Pennsylvania

Seventy-five members attended the first meeting of the Woman's Auxiliary to the Philadelphia County Medical Society, October 10. Dr. Charles L. Brown, president of the Philadelphia County Medical Society, and Mr. Don Rose, columnist for the Philadelphia *Evening Bulletin*, were guest speakers.

Wisconsin

The Woman's Auxiliary to the Dodge County Medical Society sent Christmas gifts to all of the Dodge County Medical Society members in the armed forces.

Dr. Carl A. Moyer of the University of Michigan Medical School, Ann Arbor, recently addressed the members of the Woman's Auxiliary to the Milwaukee County Medical Society on "The Dog in Modern Medicine."

Washington Letter

(From a Special Correspondent)

Feb. 12, 1945.

Appeal for Nurses "Drains" Veterans' Hospitals

The current drive for nurses for the armed forces has had an almost disastrous effect on veterans' hospitals, George E. Ijans, assistant administrator of the Veterans Administration, advised the House Military Affairs Committee. Nurses have "left in droves" to join up, and as a result veterans' hospitals need 1,000 more nurses immediately and 4,000 within the next two years. "We have asked Secretary of War Stimson three times to commission our nurses so they will stay with us," said Mr. Ijans. World War II veterans are pouring into veterans' hospitals. The present patient load includes 43,598 World War I patients and 15,772 World War II patients; and 2,897 more wounded men were turned over from Army and Navy hospitals last month. Tuberculosis and psychiatric beds are already full and the Veterans Administration is taking over several more hospitals from the Army for psychiatric patients. All tuberculosis and psychiatric wards are already full. Mr. Ijans said he favored a draft of dietitians and technicians with nurses. He admitted that little effort had been made to utilize a pool of 9,000 registered Negro nurses.

Capital May Get Clinic for Chronic Alcoholic Addicts

Dr. Michael Miller, St. Elizabeths Hospital psychiatrist and expert on treatment for alcoholic addicts, has volunteered to serve as chief of a proposed experimental clinic for alcoholic addicts in Washington, for which a bill is to be submitted to Congress. Representative John L. McMillan, Democrat of South Carolina, will sponsor the bill, which, according to Charles V. Morris, secretary of the corrections division of the Council of Social Agencies, will be drawn by five of its members. Alternative projects discussed by the council here were (1) an experimental clinic in the Capital staffed with volunteer workers, (2) promotion of legislation to establish the clinic as a part of the District government or as a separate agency and (3) a request for funds to expand the mental hygiene clinic already authorized under the District Health Department.

Industrial Accidents Injure 2,225,000 Persons

Secretary of Labor Frances Perkins estimated today that two and a quarter million persons were disabled during 1944 through industrial injuries. This represents an upward trend in work injuries which started in 1938, but the 1944 total was below that for 1943. Field safety experts of the department, Miss Perkins said, had brought a working knowledge of industrial safety technics to nearly 30,000 war production plants, which she said indicated that adequate instruction and supervision of workers can reduce accidents. The 1944 record is serious, she added, as it involved an actual loss in working time of more than forty-three and a half million work days, equivalent to full annual employment for 145,000 workers. Only two of the major industry groups had increases in 1944 over 1943, trade and railroads, although in neither case was the increase pronounced.

Alfaro Heads UNRRA Mission in Caribbean Area

Herbert H. Lehman, director general of the United Nations Relief and Rehabilitation Administration, announces the appointment of Dr. Ricardo J. Alfaro, former president of Panama, to head an UNRRA mission for eight member governments in the Caribbean area. The mission will visit Panama, Costa Rica, Nicaragua, Honduras, El Salvador, Guatemala, Haiti and the Dominican Republic. Discussions will be held with the governments of each country on collaboration with UNRRA. The way in which each government can participate fully in the UNRRA program will be considered. Mr. Lehman also announces the appointment of Comdr. R. G. A. Jackson of Australia as senior deputy director general. Commander Jackson, who is expected in Washington soon, was head of the Middle East Supply Center in 1943 and was appointed in 1944 principal assistant to the United Kingdom minister of state in the Middle East.

Red Cross Prepares for Floods in Eastern States

Flood preparedness plans have been completed throughout snow jammed New England and the Middle Atlantic states, according to Basil O'Connor, national chairman of the Red Cross. Disaster representatives have visited all danger points within the past three weeks to confer with Red Cross chapters in threatened valleys. The heaviest snow cover and greatest flood potentiality is said to lie in the Connecticut River valley and also in the valleys of the Allegheny, Monongahela, Conemaugh, Susquehanna, Delaware, Lehigh, Schuylkill and Juniata rivers in Pennsylvania and the upper Hudson, Mohawk, Tonawanda, Chenango and Merrimac rivers in New York and New England. Gradual thawing is now in progress in these areas.

Undulant Fever Cases Show Increase During 1945

The U. S. Public Health Service reports that almost twice as many cases of undulant fever have been reported so far this year as compared with the same period in 1944. The total on February 3 was 354 as against 184 for last year. Reporting of cases of undulant fever is now required in all forty-eight states and the District of Columbia, but 1944 was the first year in which all states reported the disease. Failure of some states to report may have accounted for the lower record for 1943. The U. S. Public Health Service states that "the nation's health is otherwise good, with no major increases in communicable diseases reported."

Social Hygiene Program in Capital Applauded

The Social Hygiene Society of the District of Columbia has been widely applauded for its work. Praise was bestowed in connection with the observance of Social Hygiene Day in Washington. It was emphasized that through its efforts the fight against venereal disease and prostitution had been brought into the open. Better understanding of venereal diseases and better cures have assisted the work of social hygiene workers materially. Greater emphasis is being given to sex education and the building of character. In the District, seriously diseased prostitutes are sent to Washington's new 100 bed rapid treatment center in Gallinger Hospital. Health Officer George H. Ruhland reports that 2,200 patients were treated there last year. Physicians report more cases under treatment than formerly, and the venereal disease clinics are said to be in greater use. The worst peril at this time is regarded as the "victory girls" and amateur pickups, whose promiscuity with men in uniform has added to venereal disease statistics.

Official Notes

RADIO NETWORK BROADCASTS

"Doctors Look Ahead" is both title and theme for the National Broadcasting Company network broadcast by the American Medical Association which began January 6 and will run weekly through June 30 each Saturday at 4 p. m. Eastern War Time (3 p. m. Central War Time, 2 p. m. Mountain War Time and 1 p. m. Pacific War Time). This program, now in its twelfth year, is aired cooperatively by the American Medical Association and the National Broadcasting Company on a sustaining nonprofit basis as an educational feature. This is the tenth consecutive year of dramatization.

The forthcoming subjects are:

February 17. Refrigeration Anesthesia.

February 24. Discharged Soldier.

March 3. Nutrition at Home (Dr. G. K. Anderson).

Local stations sometimes record the program for broadcasting at an hour other than the network schedule. Local papers should be consulted if the program is not heard at the time announced.

The Bureau of Health Education, which directs the program, welcomes comments and suggestions from physicians.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

DISTRICT OF COLUMBIA

Dr. Guthrie Goes to Connecticut.—Dr. Riley Henry Guthrie, assistant superintendent of St. Elizabeths Hospital and professor of clinical psychiatry at Georgetown University School of Medicine, Washington, has resigned to become superintendent of the Norwich (Conn.) State Hospital, effective February 1. Dr. Guthrie graduated at the University of Tennessee College of Medicine, Memphis, in 1921 and was formerly associated with the Boston Psychopathic Hospital.

GEORGIA

Proposed Program to Coordinate Health Activities.—The health panel of the Agricultural and Industrial Development Board of Georgia has submitted a program to coordinate health activities in the state and improve the efficiency of operation. The plan has the approval of the state board of health, the Georgia Hospital Association and the Medical Association of Georgia, and it is hoped that the present legislature will endorse it. It has been recommended that the state be divided into nine districts, each to have a complete medical staff composed of administrator, epidemiologist, venereal disease control officer, tuberculosis control officer and maternal and child hygiene control officer, to be solely responsible for the complete public health program in the district. In addition there would be one sanitary engineer in each office. The recommendations carry certain provisions for the availability of nurses. Under the plan each county board of health would operate under its present powers. The health panel also suggests that the act of 1941, which gave each county the right to create a hospital authority, be made operative in every county, the hospital authority to be responsible for the construction and maintenance of hospitals, clinics and health centers. Certain recommendations have been made for the financial handling of the program, which has been described as definitely the development program for the postwar period in Georgia.

ILLINOIS

Personal.—Dr. Charles D. Nobles has been appointed managing officer of the Anna State Hospital, Anna.—Dr. Margaret M. Scannell has resigned as medical officer with the Illinois Commission for Handicapped Children to enter private practice in the Chicago area, effective January 31.

Change in Health Literature.—Effective with the issue of January 6, the former weekly and biweekly bulletins of the Illinois Department of Public Health will be combined and issued as the Weekly Report of the Division of Communicable Diseases. Tables will be used to indicate the current week's provisional case reports of the more important communicable diseases, both in the state as a whole and in Chicago. The case reports for the same week of last year, and the five year median, when this is of significance, will also be shown for the purpose of comparison.

Kenneth Morse Temporarily Placed in Charge of Industrial Hygiene.—Kenneth M. Morse, engineer in the division, has been appointed temporarily to take charge of the division of industrial hygiene in the Illinois Department of Public Health. The appointment was made necessary by the reactivation of the U. S. Public Health Service commission of Dr. Bruce M. Brown, acting medical director of the division of industrial hygiene, Iowa Department of Health, Des Moines, who has been assigned to immediate duty with the coast guard (THE JOURNAL, January 6, p. 45).

KANSAS

Fred Mayes Returns to Kansas.—Dr. William Fred Mayes, who resigned as director of the division of maternal and child welfare, state board of health, Topeka, to become regional medical consultant to the U. S. Children's Bureau, Washington, D. C., has returned to the state board of health as assistant state health officer and director of local health services (THE JOURNAL, Jan. 15, 1944, p. 180). Dr. Mayes, who previously served with the state board, first as assistant director and later as director of the division of maternal and child welfare, carried on his activities with the Children's

Bureau in seven Southeastern states. The position of director of local health services of the state health department has been vacant since the resignation of Dr. Henry H. Asher to become health officer of Alger and Schoolcraft counties, Mich. (THE JOURNAL, Sept. 18, 1943, p. 158).

MASSACHUSETTS

Putnam Fellowship for Advanced Research Available.—Applications for the Helen Putnam Fellowship for Advanced Research in genetics or mental health should be submitted to Radcliffe College, Cambridge, not later than April 15. The fellowship, which bears the name of the physician who gave the endowment for the award, will pay a stipend of \$1,900 and its tenure will run for a term of eleven months from October 1 with the possibility of a renewal for a similar period. All normal laboratory facilities will be provided to the holder of the fellowship. Each fellow will be assigned room and board (at cost) in one of the Radcliffe graduate houses and will be expected to be in residence during the tenure of the fellowship. No restrictions as to age will be imposed by the committee on award. In general, however, the committee will limit its choice to mature women scholars who have gained their doctorate or who possess equivalent qualifications. All candidates for the fellowship will be required to submit formal proof of their scholarly attainments and productivity. Appointments will be limited to those candidates who can submit a plan of research that is already under way, and proofs of progress may be required by the committee. The creation of the fellowship was announced in THE JOURNAL, Dec. 23, 1944, page 1094. The committee on award, which includes six members of the faculty of Harvard University, and Wilbur K. Jordan, Ph.D., president of Radcliffe College, will announce the appointment to the fellowship on or about May 15. Additional information may be obtained from the Committee on the Helen Putnam Fellowship for Advanced Research, Radcliffe College, Cambridge 38.

MICHIGAN

Clinical Teaching in Internal Medicine.—The department of postgraduate medicine of the University of Michigan Medical School, Ann Arbor, of which Dr. Howard H. Cummings is chairman, has arranged a clinical teaching program every Thursday afternoon beginning March 1 and continuing through May 3 at the University Hospital. Designed to serve practicing physicians, the program will be carried out on ward rounds conducted by two different members of the senior staff of the department of internal medicine and will end with a conference of the entire medical staff in review of recent electrocardiograms. If the course is acceptable and serves the needs of the medical profession, it may be extended throughout the school year.

Raymond Hussey to Organize School of Occupational Health.—Dr. Raymond Hussey, Baltimore, has been returned from active military duty to inactive status in order to become dean, professor of preventive medicine and organizer of the School of Occupational Health at the Wayne University Medical Science Center, Detroit. In developing the program Dr. Hussey announces that the positive aspect of health will be the main consideration in developing the engineering-medical relations for the promotion and maintenance of health through the establishment of employee health programs in all levels of occupation. Dr. Hussey, who, during his period of service with the Army of the United States, organized and directed the activities of the Army Industrial Hygiene Laboratory, graduated at the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, in 1911. In the past his work has included the organization and direction of the medical board for occupational diseases in Maryland. He held the chairmanship of the committee on industrial health of the Medical and Chirurgical Faculty of Maryland and is currently a member of the Council on Industrial Health of the American Medical Association, serving as chairman of its committee on workmen's compensation.

MISSOURI

License Restored.—Dr. Ludwig O. Muench, Washington, was recently granted a restoration of his license to practice medicine in Missouri (THE JOURNAL, June 24, 1944, p. 588).

The Loeb Lecture.—Dr. Alfred Blalock, professor of surgery, Johns Hopkins University School of Medicine, Baltimore, delivered the tenth annual Leo Loeb Lecture in St. Louis, February 13, under the auspices of Mu chapter of Phi Beta Pi Fraternity, Washington University School of Medicine. His subject was "Traumatic Shock."

Forty-Five Year Probation for Narcotic Violation.—Dr. Minor J. Holmes, Kansas City, on Oct. 9, 1944 was placed on probation for a period of forty-five years for violation of the federal narcotic laws. According to the Bureau of Narcotics, Washington, D. C., Dr. Holmes was convicted in the U. S. District Court on Feb. 17, 1944, and on October 10 his sentence of two years was suspended and he was placed on probation for a period of five years. On October 3, according to the Bureau of Narcotics, Dr. Holmes had withdrawn his plea of not guilty and entered a plea of guilty to nine counts of the indictment. October 9 his sentence of five years was suspended and he was placed on probation for a period of forty-five years. Under the terms of the probation it was stipulated that Dr. Holmes should not prescribe or dispense narcotic drugs and should not engage in the practice of medicine.

NEW YORK

Erie Bulletin Changes Face.—The *Bulletin* of the Medical Society of the County of Erie and the Buffalo Academy of Medicine appeared in a larger size with a complete change of format in January. New columns have been added, including one page on the workmen's compensation board. In an editorial comment it was stated that the new bulletin will serve as an instrument of promoting health and welfare as well as a coordinating link to members in service and their civilian confrères.

Graduate Lectures.—The Tompkins County Medical Society will be addressed in Ithaca, February 20, by Dr. Howard B. Slavin, Rochester, on "Penicillin Therapy" and March 20 by Dr. Barton F. Hauenstein, Buffalo, on "Present and Postwar Importance of Malaria." Dr. Percival K. Menzies, Syracuse, will address the Cortland County Medical Society, March 16, on "Treatment of Injuries to the Hands and Feet." Dr. Leo E. Gibson, professor of clinical surgery (urology), Syracuse University College of Medicine, will deliver a graduate lecture before the Cortland County Medical Society, February 16, at the Cortland County Hospital. His subject will be "Infections of the Genitourinary Tract." These lectures are sponsored cooperatively by the state medical society and the state department of health.

Survey to Determine Facilities for Narcotic Care.—The bureau of narcotic control of the New York State Department of Health recently launched a survey to ascertain which private hospitals and sanatoriums are able to accept cases of narcotic drug addiction for treatment under the direction of a physician. On January 11 it was disclosed that the following places were available in the upper part of the state:

In the Buffalo area, the Edward J. Meyer Memorial Hospital, 462 Grider Street, Buffalo, under the direction of Dr. William T. Clark, will take such cases, at \$3.50 a day, with a minimum stay of twenty-one days required.

The Brigham Hall Hospital, Canandaigua, will take patients at rates from \$60 per week up, with a minimum stay of six weeks required.

In the Syracuse area the Twin Elms, 638 West Onondaga Street, Syracuse, under the direction of Dr. Eugene N. Boudreau, will take patients at a minimum of \$75 per week.

In Oneida the Oneida City Hospital and the Main Street Hospital will take a limited number of selected cases at rates from \$6 to \$7.75 a day for private rooms.

The Waterloo Memorial Hospital, Waterloo, will take 1 patient at a time, to be treated by a physician attached to this hospital, at rates from \$30 to \$35 per week.

In the Albany area Albany Hospital, Albany, under the direction of Dr. Severo E. Barrera, will accept cases at \$7 a day.

The Willows Nursing Home, Cedar Hills, under the direction of Dr. William B. Cornell, will take patients at \$35 and up per week.

Marshall Sanitarium, Linden Avenue, Troy, will take several such cases; rates are obtainable on request.

A list of places where treatment of addiction may be obtained in the New York City area had not as yet been compiled.

New York City

Division of Physical Medicine Created.—New York University has established a division of physical medicine, financed under a \$250,000 grant from the Baruch Committee on Physical Medicine, to specialize in research in physical and vocational therapy and in the preparation of technical personnel to rehabilitate both wounded war veterans and civilian disabled. The division will work in cooperation with the Bellevue Hospital and the Institute for the Crippled and Disabled and will be in charge of Dr. George G. Deaver, director of the university's program for training technicians in physical therapy and medical director of the Institute for the Crippled and Disabled. Dr. Deaver will have the title of clinical professor in charge of the new division at the university and physician in charge of physical medicine at Bellevue.

Health and Welfare Retirement Association.—The National Health and Welfare Retirement Association, Inc., a nonprofit organization, has recently been established with headquarters at 441 Lexington Avenue to assist certain

employees not eligible for benefits of old age security to participate with their employers in insurance coverage. It was stated that some 500,000 workers in private social, health and welfare agencies throughout the country will benefit. The new association was recently authorized by the New York State superintendent of insurance. Under the plan employees of the participating organizations normally may retire at the age of 65, with the option of retiring after reaching the age of 55. They will also be eligible to receive annuities for past and future services based on individual salaries.

Heart Association Separates from Tuberculosis Group.—The New York Heart Association, which has been a part of the New York Tuberculosis and Health Association, Inc., since 1926, is to set up as a separate organization on April 1, according to the *New York Times*. The expansion of the heart association program in the last few years was the reason given for the inadvisability of the organizations to continue their associated activities. The heart association will have offices at the New York Academy of Medicine, 2 East 103d Street. In the near future it will start a campaign to raise \$150,000 to finance itself during the next two years. The offices of the finance committee are at 331 Madison Avenue. Officers and directors of the heart association will continue under the newly formed corporation. Dr. Edwin P. Maynard Jr., Brooklyn, is president of the association, and Dr. Harold E. B. Pardee chairman of the finance committee.

NORTH CAROLINA

Appointments in State Department of Health.—Dr. Charles B. Davis Jr., Wilmington, has resigned as medical examiner of the North Carolina Shipbuilding Company to become director of the division of industrial hygiene of the state board of health, effective January 1. Dr. Davis succeeded Dr. Thomas F. Vestal, Raleigh, who has been named head of the division of tuberculosis control of the state board of health.

Academy Celebrates Seventy-Fifth Anniversary.—On February 2 the Raleigh Academy of Medicine, the oldest local medical organization in North Carolina which has preserved a continuous existence, celebrated its seventy-fifth anniversary at a dinner in the Hotel Sir Walter. Dr. Hubert A. Royster, Raleigh, served as toastmaster at the dinner and Major Gen. George F. Lull, deputy surgeon general, U. S. Army, gave the principal address, on "Some Wartime Problems of the Medical Department and Some of Its Accomplishments." Other speakers included an address by Dr. Vonnice M. Hicks, Raleigh, the president of the academy, Mayor Graham H. Andrews and Dr. Paul F. Whitaker, Kinston, president of the state medical society. Dr. Charles P. Eldridge, Raleigh, gave a review of the academy's history during the past twenty-five years. Greetings were read from Governor R. Gregg Cherry.

OHIO

Coroners' Association Formed.—The Ohio State Coroners' Association was recently organized, with E. R. Sturgis, East Liverpool, president; Dr. Robert T. Rowe, Medina, vice president and Dr. Demetrio M. Ceramella, New Philadelphia, secretary-treasurer. According to the *Ohio State Medical Journal* the coroners are the last group of elective county officials to form a state association.

OKLAHOMA

Hospital News.—Ground was broken recently for the construction of the new Norman Hospital on the site at Johnson Street and Ponca Avenue, Norman. Dr. John W. Shackelford, director of the local health service bureau, state health department, gave the principal address at the ceremonies.

Student News.—The students at the University of Oklahoma School of Medicine, Oklahoma City, under the sponsorship of the recently organized student council, on Dec. 9, 1944 published the first issue of the *Student Newspaper*, of which Mark R. Johnson, a member of the junior class, is editor. Plans are under way by the students in the medical school to publish the first yearbook in the form of a medical school annual to be devoted entirely to the medical school. J. Raymond Hinshaw, president of the junior class, is serving as editor of the book, which will consist of approximately seventy-five pages and will contain pictures of the faculty, students, buildings, student activities, a complete alumni directory and other items of interest. The publication of this annual is also sponsored by the student council.

OREGON

Telephone Employees Seek to Establish Own Fees.—

Oregon telephone employees through the medium of their recently incorporated Telephone Employees Hospital Association recently went over the heads of regular medical organizations, including the Oregon State Medical Society and the Oregon Physicians Service, and registered a direct appeal to individual physicians throughout the state through the following communication:

To All Physicians and Surgeons in Oregon:

The telephone employees have organized a hospital association among the employees only. We have worked out a list of fees with a group of doctors herewith enclosed for your approval. For your convenience in replying we are also enclosing a self addressed stamped envelop.

Thanking you in advance,

Yours very truly,

TELEPHONE EMPLOYEES HOSPITAL ASSN., INC.
M. E. BLANKENSHIP, Chairman.

After meetings of representative groups indicated that the telephone employees plan was not practical and in need of development, the question of approval of the plan or the fee schedule was not voted on but was left open for further discussions. *Northwest Medicine* reports that this is a definite crisis in the affairs of Oregon's doctors and a bold attempt to foist cut rate medical care on them and their patients under the guise of a poorly conceived prepaid plan. It points out that the door has not been closed to a proper consideration of the health problem of the telephone employees if they have one, indicating that the physicians of the state are aware of the distinctions between prepaid and cut rate medical schemes.

PENNSYLVANIA

Personal.—Dr. James A. Collins Jr. was chosen president recently of the Danville Board of Health.—Dr. Henry I. Klopp, superintendent of the Allentown State Hospital, Allentown, from 1912 until his retirement in July 1942, observed his seventy-fifth birthday, January 1.

Philadelphia

University News.—Of the nineteen living members of the class of 1895 of Woman's Medical College of Pennsylvania, six were present to receive the fifty year medal awarded by the Alumnae Association to members of the class during the ninety-third annual commencement, January 10. Dean A. Clark, senior surgeon, U. S. Public Health Service Reserve, delivered the commencement address, on "Trends in Medical Practice."

Federal Funds for Child Care.—Philadelphia received \$152,862 in federal funds January 19 to expand its child care services and check a downward trend in employment of women. The allocation will assist the board of education in expanding its facilities to accommodate 1,400 children, 800 preschool children between the ages of 2 and 6 and 600 school age children who are supervised before and after school. Most of the money will be used to help continue in operation nineteen war nurseries and child centers caring for 677 preschool and 567 school age children through June 30, to assist the board to establish another combined nursery center for 156 additional children.

Cancer Seminars.—A series of five seminars on cancer opened February 9 under the auspices of the committee on cancer control of the Philadelphia County Medical Society. The first was given on cancer of the head, neck and lung with Drs. George C. Yeager, George M. Dorrance, Wilbur Einory Burnett, Louis H. Clerf and John V. Blady. The second was held February 16 on cancer of the skin with Drs. Carroll S. Wright, Bernard P. Widmann, William E. Ehrlich, Henry A. Miller and Herman Beerman. Subsequent seminars will be devoted to cancer of the urinary tract February 23, cancer of the breast and uterus March 2 and cancer of the gastrointestinal tract March 9.

WEST VIRGINIA

Transfer of Center for Venereal Diseases to State.—The Public Health Council of West Virginia has voted to accept the offer of the U. S. government to transfer to the state of West Virginia the Kanawha Valley Medical Center (rapid treatment center for venereal diseases), South Charleston. The transfer was unanimously approved by the council of the West Virginia State Medical Association. At a meeting to discuss the details of the transaction on January 18 it was brought out that the institution is now being operated at government expense under the supervision of the state health department; that the personnel consists of about 50, that the bed capacity is about 100, that an average of 245

cases are being treated each month and that the center is being operated by the government solely for the control and treatment of venereal diseases in a communicable stage. It was explained that, under state control, operation could be extended by the state health department so that patients could be given treatment until cures are effected, thus lessening the possibility that such patients would become state wards for the remainder of their lives. The medical center is one of fifty-five such institutions in the United States. It is said that more than a million dollars has been invested in the project. Most of the buildings were formerly used by the National Youth Administration. With the exception of possibly one clerk, all the expenses of the operation of the center for at least the next two years will have to be borne by the government, as no provision is made in the current budget bill for such expenses during the biennium beginning July 1, 1945.

GENERAL

Southern Medical Association Creates Section on Industrial Health.—Announcement is made of the recent establishment of a section on industrial health within the Southern Medical Association. The officers include Drs. Charles W. Roberts, Atlanta, Ga., chairman, Oliver B. Zeinert, St. Louis, vice chairman and John J. Brandabur, Huntington, W. Va., secretary.

Special Society Elections.—Earl R. Serles, M.S., dean, University of Illinois College of Pharmacy, Chicago, was chosen president-elect of the American Pharmaceutical Association in a recent mail ballot. Other officers include A. Lee Adams, Glencoe, Ill., and Harold V. Darnell, Indianapolis, vice presidents. These officers will assume their positions at the next convention of the association. Robert P. Fischelis, Phar.D., Washington, D. C., is secretary of the American Pharmaceutical Association. Dr. Fischelis has resigned as director of the chemicals, drugs and health supplies division in the Office of Civilian Requirements, War Production Board, to become secretary and general manager of the association at its headquarters building in Washington (*THE JOURNAL*, Dec. 23, 1944, p. 1096).—Dr. Antonio A. Burke, Norfolk, Va., was chosen president of the Seaboard Medical Association of Virginia and North Carolina at its annual meeting in Wilson, N. C., December 5-7. Other officers include Drs. Ralph L. Fike, Wilson; Randolph B. Grinnan Jr., Norfolk; John E. G. McLain, Wilson, and Clayton W. Eley, Norfolk, vice presidents, and Dr. Clarence P. Jones, Newport News, Va., secretary-treasurer. The fiftieth anniversary meeting will be held at Virginia Beach, Va., in the autumn.

Decrease in Marriages Predicted.—The increase of the marriage rate by the entrance of the United States into the war has about run its course, and the country is entering a period when marriages will fall even below the peacetime average, according to statisticians of the Metropolitan Life Insurance Company. A release discussing the situation pointed out that 1944 was the second successive year in which the marriage rate for the country as a whole declined from the peak established in 1942. While overall figures show a decline in marriages, the statisticians find many variations in pattern in the records of individual cities of 100,000 population or more. In general, cities of New England and of the Middle Atlantic and East North Central states have experienced a decline in marriages ever since 1942. In urban centers of the West North Central states as a whole the decline began only in 1943, while among Southern urban centers the decline did not set in until 1944. An actual increase in marriages is reported in 1944 in the larger cities of the Mountain and Pacific Coast states, although the gain over the preceding year was small. Using 1941, the last prewar year, as base the statisticians find that the decrease in marriages graded from east to west, with the sharpest declines among New England cities and lesser reductions westward through the Middle Atlantic, East North Central and West North Central states. New York and Chicago fell behind year by year, while in Philadelphia and Detroit the decline began after 1942. Decreases of more than 40 per cent over the three year period were reported among others from Cincinnati, Toledo and Youngstown, Ohio. While the South reported its first decline in 1944, only four of its cities had fewer marriages than in 1941. Norfolk, Va., site of an important naval base, more than doubled its 1941 marriages in 1944, and 75 per cent increases were recorded in Jacksonville, Miami and Tampa, Fla. Marriages in the large cities of the Mountain and Pacific Coast states as a whole showed a 70 per cent increase in 1944 over 1941. In California, San Diego had about three and one-half times the number of its 1941 marriages. This increase is

attributed to a large naval base and the growth of neighboring aviation industries. Marriages in San Francisco, Sacramento and Oakland more than doubled, while farther north along the coast, Spokane, Wash., almost doubled its rate. However, the statisticians anticipate a reversal in the trend for Mountain and Pacific Coast states during 1945. Two main factors emerge as causes of the recent conflicting local changes in marriages: the migration of population brought about by war industries and the induction of young men into the armed services. Despite the recent great fluctuations, the insurance company's statisticians believe that later on, when the marriage rates for the periods immediately preceding and immediately following the war, together with the war period itself, can be observed, the general average of the marriage rate over the period as a whole will not be very far different from the usual peacetime figure.

Vitamin Research Institute Organized.—The Vitamin Research Institute was formed at a meeting in the Waldorf-Astoria, New York, January 29 and represents the first effort of the vitamin industry to collect and correlate on its own behalf, for guidance of its members, the medical profession, health authorities and educational institutions, data that formerly had been gathered by individual researchers and subjected to a variety of interpretations within and outside the trade, according to the New York *Herald Tribune*. The meeting was attended by representatives of forty companies in the field. The new institute will be financed through annual dues based on the annual volume of sales of each member. In addition, some studies will be initiated through special grants by manufacturers and distributors. In a statement to the press Dr. Theodore G. Klumpp, New York, president of Winthrop Chemical Company, a member of the organizing group, said that "the activities would take three general forms: laboratory studies of vitamin deficiencies; clinical deficiency inquiries, including greater study of the so-called borderline deficiency cases, and epidemiological investigations into such subjects as the incidence of deficiencies among various income, geographical and occupational groups." The objectives of the newly organized institute are:

To promote and encourage the study of problems in nutrition, particularly as they relate to vitamins, toward the end that the health and welfare of mankind may be improved through better nutrition.

To initiate, promote, assist, develop, maintain, conduct and carry on, directly or indirectly, studies, investigations and research in any way relating to medicine and health and without limiting in any way the generality of this purpose, in particular to initiate, promote, assist, develop, maintain, conduct and carry on, directly or indirectly, studies, investigations and research in any way relating to vitamins and any subject directly or indirectly related thereto.

To make voluntary contributions or grants of money from the funds of the institute at any time and from time to time to individuals, partnerships, corporations, organizations or institutions to conduct, carry on or continue any such studies, investigations and research.

To provide, establish and maintain scholarships, fellowships and other aids or facilities for such studies, investigations and research.

To obtain, collect, disseminate and distribute to members of the vitamin industry, the professions, public health authorities and educational institutions information as to the quality, purposes, uses and effects of vitamins and their relation to nutrition and health.

To study, adopt and recommend proper standards and terminology for use in connection with the manufacture and sale of vitamin products.

To study, adopt and recommend standards of publicity practices for use in connection with the sale of vitamin products and to discourage improper practices in connection therewith.

Membership has been divided into four classifications:

Professional: Firms that manufacture packaged vitamin products which are promoted primarily to the profession, including physicians, pharmacists, dentists and veterinarians.

Consumer: Firms that manufacture packaged vitamin products which are merchandised primarily by means of direct consumer advertising, such as radio, newspaper and direct mail.

Basic Producers: Firms whose major interest in the vitamin industry is the supplying of vitamins in bulk to manufacturers and distributors.

Honorary: Persons who, because of their scientific achievement or position, are invited to membership in the institute by the membership committee.

A board of governors was named consisting of nineteen members to serve as the controlling body of the institute. The

direct business and executive management will be vested in an executive committee appointed by the board of governors, and the detail operation shall be conducted by an executive secretary.

FOREIGN

Personal.—Brigadier George MacDonald, emeritus professor of physiology of the University of Liverpool, has been promoted to be director of the Ross Institute of Tropical Hygiene of the London School of Hygiene and Tropical Medicine; he has been assistant director of the institute since 1939.

CORRECTION

Para-Aminohippuric Acid.—In the article by Beyer et al. (*THE JOURNAL*, Dec. 16, 1944, p. 1007) the second last line of the second column should read (47.7 to 46.9 mg. per hundred cubic centimeters). The word "hundred" was inadvertently omitted as published.

Government Services

Health Services for All Mothers and Children After the War

A nationwide survey of personnel and facilities needed to assure comprehensive health services for all mothers and children after the war, which will be undertaken by the American Academy of Pediatrics with the help of the Children's Bureau, United States Department of Labor, and the Public Health Service, Federal Security Agency, received the endorsement of seventy leading physicians and other professional workers meeting in Washington as an advisory committee to the Children's Bureau, the Department of Labor reported recently. This action of its advisory committee and others bearing on the administration of the Children's Bureau maternal and child health program were made known by Dr. Martha M. Eliot, associate chief of the bureau. Chairmen of the committee are Dr. Nicholson J. Eastman, professor of obstetrics at the Johns Hopkins University School of Medicine, Baltimore, and Dr. Henry F. Helmholz, chief of the pediatric department of the Mayo Clinic, Rochester, Minn. Supporting the recently declared objective of the Academy of Pediatrics to make available to all mothers and children in the United States all essential preventive, diagnostic and curative medical services of high quality, which, used in cooperation with the other services for children, will make this country an ideal place for children to grow into responsible citizens, the Children's Bureau advisory committee urged full cooperation in the projected survey. Dr. Eliot reported that the advisory committee also approved the position recently taken by the Academy of Pediatrics in regard to the financing of any extension of medical services for children that "cannot be reduced to any one simple formula." It may be provided for by direct payments to the physician by the family, by voluntary or compulsory insurance plans or by tax supported local, state or federal programs. Recognizing that any comprehensive health program will be possible only if facilities and personnel are available, the advisory committee laid special stress on building up medical and nursing staffs in hospitals and on training more obstetricians, pediatricians, nurses and social workers in the care of mothers and children. Grants for research were urged. One national goal, the committee held, should be "the delivery of all women in good hospitals under the care of competent physicians." To this end the committee directed attention to the need for building more maternity units as parts of general hospitals. "It would be highly desirable that the general hospitals be health centers designed to supply all types of medical service to a given area," the committee said. More beds for babies and older children in general hospitals and better facilities for the care of premature and newborn infants are needed, and "the establishment of children's hospitals in association with general hospitals or medical school units is to be encouraged," the committee said. Tackling the problem of the health of school children, pointed to by Dr. Eliot as "one of our most serious neglects, revealed by draft rejections," the committee called for the creation in the Children's Bureau of a special unit on school health to work in cooperation with the United States Office of Education, Federal Security Agency. It also urged local, state and federal authorities to help local departments of health and education to establish good working relations in providing preventive and curative health programs for school children.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 20, 1945.

The Treatment of Wound Shock

In 1940 the Medical Research Council issued a memorandum for the guidance of medical officers on the treatment of wound shock. The experience of four years of war and research has made necessary a new edition, which differs extensively from the first edition. The original recommendations have in the main stood the test of time well, but points of emphasis have changed and new modifications of treatment have become important. In the war of 1914-1918 emphasis was laid on the circulatory effects of injury, especially those resulting from decreased blood volume. It is now appreciated that the remote effects of injury also comprise such diverse effects as renal failure in crushing injuries, systemic effects in burns, fat embolism and severe complicating bacterial infections. Two or more of these conditions may be present, producing a complicated clinical picture. Operations and anesthetics by themselves may reduce blood pressure, it is pointed out. In battle, explosive gases or exhaust fumes in confined spaces may cause poisoning, for example by carbon monoxide. Following severe injuries of different organs and tissues, resulting circulatory depression may have various underlying mechanisms: head injuries, chest injuries, abdominal injuries and limb injuries all have special features. Shock is therefore not a single entity, the memorandum emphasizes. It is generally agreed that a major feature of shock in these cases is oligemia. In the last war oligemia was regarded as something rather mysterious, but it is now generally believed to result from loss of blood and plasma externally or into the traumatized area.

When oligemic shock is severe there is no known measure other than transfusion that will save life. But when oligemia is due to toxic gases such as phosgene, mustard gas and lewisite, which induce lung irritation or predispose to pulmonary edema through absorption from the skin, transfused fluid leaves the circulation through the damaged capillaries and there is experimental evidence that transfusion is not only useless but harmful. When as a result of injury the systolic blood pressure is below 90 mm. of mercury and the pulse is rapid, transfusion should not be delayed, it is declared. Transfusion should not be withheld under these circumstances no matter how near death the patient appears to be. The apparently moribund and pulseless patient may sometimes be resuscitated by massive transfusion.

Cancer Research

At the annual meeting of the British Empire Cancer Campaign F. L. Hopwood, vice dean and professor of physics, St. Bartholomew's Hospital, said that with sober pride and thankfulness they could say that three aims of the campaign—to investigate the causation, cure and prevention of cancer—had been considerably advanced in the past twenty-one years. Regarding the cure of cancer, he stated, they could view the future with ever increasing confidence. Their satisfaction that carcinoma of the prostate could in many instances be controlled by the synthetic estrogen diethylstilbestrol was enhanced by the knowledge that this compound was first synthesized by Professor Dodds, working in association with Sir Robert Robinson and their respective teams. The alluring prospect was opening up of combining radiation therapy and chemotherapy in a new attack on cancer, Professor Hopwood said. The new forms of radiation and the supply of adequate quantities of artificially prepared radioactive substances required such powerful apparatus that they could probably be installed only

in special institutes staffed by teams of specialists, including experts in all the basic medical sciences, he thought. The cost would be high, but the outlook was sufficiently promising to justify it many times over. Obviously the new radiations and radioactive substances must also have application in agriculture and industry. The scientific committees of the campaign were giving careful attention to the question of how best to avail themselves of these new agents and to collaborate with other interested national bodies, Professor Hopwood added.

ICELAND

(From Our Own Correspondent)

Jan. 27, 1945.

The Military Occupation

In May 1940 British forces occupied Iceland, and a little more than a year later, or July 7, 1941, American forces moved into Iceland, before the United States had entered the war.

The occupying forces have been received with general understanding by the population. Iceland has no army, and for centuries the Icelanders have been among the most peaceful of nations, their only enemy being the elements, which in the form of storms, earthquakes and volcanic eruptions have taken as many lives as other nations lose in wars. Criminality has been low, and a murder has not been committed here since 1929. Although the population is small (only 130,000) this is an unusually low rate of homicide.

When the Americans came some soldiers used their guns as the final argument in disputes, which horrified the Icelanders. After a few killings of Icelanders prevention taken by the authorities on both sides seems to have been effective, for such cases do not occur any more. Misunderstandings are bound to take place under such circumstances, and these unfortunate incidents have been handled with tact and understanding by the respective authorities.

Venereal Diseases

As Iceland has had a low rate of venereal diseases, a considerable increase was expected owing to the great inflow of soldiers to the country. But although the communication between soldiers and the female population has been about the same here as anywhere else, it is a fact which gives high credit to the medical service of the American military forces that venereal morbidity has increased but little since the occupation. Before the war there were only about 14 fresh cases of syphilis a year in the whole country. In 1943 there were 82. But gonorrhea had dropped from 492 in 1939 to 233 in 1943, which is evidently due to the introduction of the sulfonamides. The chief source of venereal infection has not been the military forces but the merchant marine, composed of various nationalities. Most of the syphilitic infections have been traced to British ports.

Absence of Quackery

A number of Icelandic patients with difficult diseases which required special treatment have been flown over to America by permission of the American military authorities. The Icelanders have great respect for American medicine, and American doctors have seen that medical education at the University of Iceland is on a sound basis. General education ranks high in Iceland, and consequently quackery and charlatanism find a meager soil here. Osteopaths and chiropractors do not exist and could not find a means of subsistence. To practice medicine one has to have the university examination and a year's internship in a recognized hospital, all of which takes seven or eight years of medical study. If anybody else wants to practice medicine, no matter under how high sounding a title, he is not allowed to advertise or introduce himself under any title but one, which must be on his sign and prescriptions: skottlækknir, which means quack doctor. This legislation solves the whole

problem in an easy manner. In direct consequence of this course is the law which prohibits advertising of drugs of all kinds in all papers except those of the medical profession.

A systematic search for tuberculosis has just been started in Reykjavik. Every one of Reykjavik's 42,000 inhabitants will be examined by x-ray miniature film equipment and suspects picked out for further examination. Dr. S. Sigurdsson has been leading the fight against tuberculosis with great success, the mortality being now only 83 against 216 per hundred thousand fifteen years ago. This is the first examination of this kind in a European capital, and the start is promising, as everybody seems willing to cooperate.

The American influence is making itself more and more felt also in the medical field. Young doctors, who used to go to Denmark and Germany for advanced studies, are now practically all going to the United States, where their admiration and surprise are balanced between the impressive efficiency and high standard of American medicine and the vast amount of quackery thriving in its shadow.

Medical Cooperation

Cooperation between American and Icelandic doctors has been excellent, and the Americans have been helped in various emergencies, as when air transport has been needed for a patient in some distant part of the country or when some essential drug has run out of stock in the Icelandic pharmacies.

Major Edward Haboush, orthopedic surgeon from New York, became popular among the Icelanders for operating with success on one of the leading Icelandic doctors, who was supposed to have a prolapsed intervertebral disk but was found to have a bony outgrowth compressing the posterior nerve roots. Last winter the Medical Society of Reykjavik invited their American colleagues to a joint meeting, which was successful in promoting good will and mutual understanding.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, Dec. 15, 1944.

Experimental Epilepsy in Frogs

Dr. Miguel Ozorio de Almeida of the Division of Physiology of the Oswaldo Cruz Institute has published a new contribution in his series of experimental studies of the physiopathology of the nervous system. Dr. de Almeida reports results obtained in the production of epileptiform attacks induced in the Brazilian frog *Leptodactylus ocellatus* by sudden cooling of the spinal cord after section. This phenomenon, which the author calls cryoepilepsy, is the first instance so far reported in medical literature of experimental epilepsy of purely spinal origin; all attempts to obtain epileptiform attacks through electrical or chemical incitement have been negative. The attack may be influenced by various factors, among which the chief ones are the length of the spinal centers preserved in the preparation, the influence of the upper nervous centers, the inhibiting or facilitating action of external incitations simultaneously applied during the cooling period, and the effects of the labyrinthine reflexes. One of the most interesting effects is the state of hydration of the tissues. The loss of water by evaporation causes notable alterations in the characteristics of the attack, some of which result from the changes in the functions of the muscles and the peripheral organs and some from changes in the nervous centers. The report also contains a summary of Dr. de Almeida's researches on the value of the "latent period" of the attack, i. e. the interval between the beginning of the cooling and the first clear symptoms of the convulsive crisis. This latent period is variable according to the conditions under which the experiment is performed and the state of the frog preparation.

Characteristics of the cryoepilepsy attacks vary according to the species under experimentation and the habitual living conditions of the animals. Animals of the same species, but living in different climates, display conspicuous differences in the upper limit of temperature which induces the attack. This was strikingly demonstrated by the experiments performed with *Leptodactylus ocellatus* in several South American cities with different mean annual temperature (Buenos Aires and Montevideo 61 F., Rio de Janeiro 72 F., Recife 79 F.), the upper limit of critical temperature varying from 41 F. in the first two cities to 54 F. in the last. In addition to the variation in the upper limit of temperature, the cryoepileptic attack shows differences in form in animals living in places of identical climates, as is the case with *L. ocellatus* of Montevideo and Buenos Aires, such differences being probably due to variation in the composition of the water in which the animals live and also perhaps to differences of food. North American and European frogs display the attack only if the spinal cord is cooled to temperatures far lower than those at which a positive result is obtained operating on animals from hot climates. It would seem, however, that these characteristics may show a slow and progressive change as the result of adaptation to new living conditions. Specimens of *Rana catesbeiana* brought from the United States and acclimatized in a hot climate such as that of Cuba show the attacks at a temperature noticeably higher than those observed in North America in frogs of the same species.

Brief Items

The ambassador from Uruguay unveiled recently at the Medical School of the University of Rio de Janeiro a plaque offered by the Medical School of the University of Montevideo in honor of the late Professor Dr. Helion Povoá, who pioneered scientific exchanges between Uruguay and Brazil.

Dr. Fraga de Azevedo and Dr. Salazar Leite, respectively director and member of the Institute of Tropical Medicine of Lisbon, Portugal, spent several days in Rio de Janeiro studying the organization and work of the Oswaldo Cruz Institute. They were received at the National Academy of Medicine and at the Ministry of Health.

The Brazilian Society of Clinical Radiology has elected to its governing board for the year 1945 Drs. Roberto Duque Estrada, Gil Ribeiro, Jaime Rosado, J. Pires Magalhães and Alcides Lopes.

Marriages

ROBERT BURNS McEWLEN, Wakefield, Va., to Miss Maisie Askew of Suffolk, Va., in Washington, D. C., November 3.

WILLIS EDMUND MANGES, Philadelphia, to Miss Virginia Claire Bernhard of Bryn Mawr, Pa., November 12.

GEORGE EDWARD PRINCE to Miss Millie Elizabeth Mann, both of Dunn, N. C., in New York, November 26.

WILLIAM ALDEN HOGGARD JR., Hertford, N. C., to Miss Dora Glenn Granger of Lake City, Fla., November 8.

JAMES W. WOODS JR., Lewisburg, Tenn., to Miss Marion Briner of Bethlehem, Pa., November 26.

STUART WYNN GIBBS, Erwin, N. C., to Miss Sara Jean Bowen of Winston-Salem, December 16.

DOUGLAS WALDEMAR LUND to Miss Hazel Jean Tavernier, both of Berkeley, Calif., October 19.

JAMES A. FORT JR., North, S. C., to Miss Mary Lavinia Owen in Columbia, December 10.

ARAM GLORIG JR., Atlanta, Ga., to Miss Margaret Denham of London, England, recently.

MAURICE S. SANDERSON to Miss Dorothy Young, both of Waco, Texas, November 18.

GEORGE JACK PRUITT to Miss Betty Landrum, both of Houston, Texas, December 21.

Deaths

William Henry Howell, Baltimore, noted physiologist, died February 6 of heart disease, aged 84.

Dr. Howell was born in Baltimore, Feb. 20, 1860. He received the A.B. degree at Johns Hopkins University in 1881 and Ph.D. in 1884. In 1890 the University of Michigan Medical School conferred on him an honorary M.D. degree and he was licensed to practice medicine in Maryland. In subsequent years he received other honorary degrees from Trinity College, Michigan, Washington University, the University of Edinburgh and Yale University. Dr. Howell had been associate professor of physiology at Johns Hopkins University Medical School for a year in 1888. He was professor of physiology and histology at the University of Michigan Medical School from 1889 to 1892, when he went to Harvard Medical School for a year as associate professor of physiology. He was professor of physiology at Johns Hopkins from 1893 to 1931, dean of the faculty of medicine from 1899 to 1911 and assistant director of the School of Hygiene and Public Health from 1917 to 1926, when he was named director. He had been emeritus since 1931.

Dr. Howell held membership in numerous scientific groups including the National Academy of Sciences, the American Philosophical Society, the Society for Experimental Biology and Medicine and the American Physiological Society. In 1929 he was president of the thirteenth International Physiological Congress in Boston, in 1932-1933 chairman of the medical section of the National Research Council, and one of the first members to be named to the National Advisory Health Council. He was an honorary member of the English Physiological Society, associate member of the Medical and Chirurgical Faculty of Maryland and a member of the American Medical Association. Dr. Howell had contributed extensively to the literature on his specialty. He was editor of *An American Text-Book of Physiology*, 1896, author of a textbook of Physiology in 1905 and at one time associate editor of the *American Journal of Physiology*. In 1920 he with Dr. W. H. Welch founded the *American Journal of Hygiene*. In 1937 the Finney-Howell Research Foundation was created by the will of the late George Walker to honor Dr. Howell and the late Dr. John M. T. Finney. There is also a student award at the Johns Hopkins medical school which bears his name. In 1938 Dr. Howell's contribution to the fiftieth anniversary celebration of the American Physiological Society was the preparation of the first twenty-five years' history of the society. In the same year he was named a member of the newly created committee on industrial health of the Medical and Chirurgical Faculty of Maryland. In 1933 he was a member of the advisory committee of sanitation of the Baltimore Health Department.

He won an international reputation for his research on the origin of red blood corpuscles, degeneration and regeneration of nerve fibers, causation of the rhythmic beat of the heart, mechanism of sleep, relation of the inorganic salt of the blood to the beat of the heart, proteins of blood serum, coagulation of the blood and similar studies. Dr. Howell participated notably in the discovery of heparin; he also did original research on the mechanism of production of blood platelets.

Charles MacLachlan @ New Rockford, N. D.; M.B., University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1889 and M.D., Victoria University Medical Department, Coburg, Ont., Canada, 1889; member of the House of Delegates of the American Medical Association in 1916, 1918, 1929 and 1930; honorary member of the North Dakota State Medical Association; for two terms member of the first North Dakota Board of Medical Examiners; member of the state legislature, 1894-1895; member of the board of trustees of the State Hospital for Insane; vice president of the state board of health in 1894; surgeon general, North Dakota National Guard, from 1895 to 1911 with rank of colonel; president of the North Dakota State Medical Association in 1909; president and coorganizer of the Tri-County Medical Society; president of the State Game and Fish Board from 1916 to 1920; superintendent of the North Dakota State Tuberculosis Sanatorium at San Haven from 1929 to 1937; served as county coroner of Eddy County; honorary president of the International Peace Garden, Inc.; died October 7, aged 83, of bronchopneumonia and senility.

John Richard Kevin @ Brooklyn; Bellevue Hospital Medical College, New York, 1888; member of the House of Delegates of the American Medical Association from 1920 to 1925, from 1927 to 1931 and 1935-1936; fellow of the American College of Surgeons; past president of the Kings County Medical Society and the Medical Society of the State of New York; since 1913 member of the New York State Board of Social Welfare; served as member and vice president of the

state board of charities; formerly member of the board of education and board of aldermen; surgeon of the twenty-third regiment, New York National Guard, from 1909 to 1916; at one time on the staff of the Downtown Hospital; for many years on the staff of St. Mary's Hospital, where he died January 8, aged 81, of lobar pneumonia and arteriosclerotic heart disease.

Antoine Joseph Schneider @ Washington, D. C.; Johns Hopkins University School of Medicine, Baltimore, 1927; professor of neurology at the Georgetown University School of Medicine; specialist certified by the American Board of Psychiatry and Neurology, Inc.; interned and formerly resident physician at the Boston City Hospital; interned at St. Elizabeths Hospital; original member of the District of Columbia Mental Health Commission; appointed a lieutenant commander in the medical corps, U. S. Naval Reserve, on Oct. 29, 1941; reported for active duty on Nov. 12, 1941; released from active duty on Dec. 5, 1941; honorably discharged on Jan. 3, 1942 for physical disability; consultant in neuropsychiatry at the Mount Alto Hospital; died December 27, aged 41, of cerebral hemorrhage.

Ernest Lawrence Meland @ Minneapolis; University of Minnesota Medical School, Minneapolis, 1926; served as clinical assistant professor of urology at his alma mater; member of the American Urological Association and the North Central Branch of the American Urological Association; since 1939 member of the board of directors of the Hennepin County Medical Society; specialist certified by the American Board of Urology, Inc.; secretary of the Alumni Association of the Mayo Foundation; formerly fellow in urology at the Mayo Foundation, Rochester, Minn., where he served as first assistant in operative surgery from Jan. 1 to Oct. 1, 1932; interned at the Minneapolis General Hospital; on the staff of the Abbott Hospital; died December 3, aged 43, of hypernephroma.

Leon Thomas Ashcraft, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1890; professor and head of the department of urology at his alma mater; fellow of the American College of Surgeons; urologist on the staffs of the West Jersey Homeopathic Hospital, Camden, N. J., Women's Homeopathic and Broad Street hospitals; consulting urologist, Carlisle Hospital, Carlisle, Homeopathic Hospital, West Chester, Homeopathic Hospital, Pottstown, Wyoming Valley Homeopathic Hospital, Wilkes-Barre, and the William McKinley Memorial Hospital, Trenton, N. J.; in charge of the department of urology at the Hahnemann Hospital, where he died January 19, aged 78, of coronary thrombosis.

Norman Harris Williams @ Los Angeles; Johns Hopkins University School of Medicine, Baltimore, 1913; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; president-elect and formerly secretary and vice chairman of the Pacific Coast Society of Obstetrics and Gynecology; fellow of the American College of Surgeons; interned at the Cornell Division, Bellevue Hospital, New York; formerly assistant resident at the Memorial Hospital in New York and assistant resident and resident at the Manhattan Maternity Hospital and Dispensary in New York; on the attending staff of the Hospital of the Good Samaritan; died December 18, aged 57, of coronary thrombosis.

Thompson Flournoy Wickliffe @ Jasper, Ala.; Medical Department of Tulane University of Louisiana, New Orleans, 1903; member of the American Academy of Ophthalmology and Otolaryngology and the Southern Medical Association; specialist certified by the American Board of Otolaryngology; on the staffs of the Peoples and Walker hospitals; formerly acting assistant surgeon in the U. S. Public Health Service; at one time in charge of the United States Trachoma Hospital in London, Ky.; died in the Highland Avenue Baptist Hospital, Birmingham, November 26, aged 64, of subacute bacterial endocarditis.

Ralph Maurice DeGraff @ Buffalo; University of Buffalo School of Medicine, 1915; specialist certified by the American Board of Radiology, Inc.; member of the Radiological Society of North America, Inc.; treasurer of the Medical Society of the County of Erie; assistant in radiology at his alma mater; on the staff of the Children's Hospital as attending radiologist; consulting roentgenologist at the J. N. Adam Memorial Hospital, Perrysburg, and the U. S. Marine Hospital; consultant in x-ray, medical advisory board number 49, Selective Service for New York State; died December 13, aged 52.

John Henry Gemmell, Philadelphia; University of Minnesota Medical School, Minneapolis, 1928; member of the Radiological Society of North America, Inc., and the American College of Radiology; specialist certified by the American Board of Radiology, Inc.; interned at the Bellevue Hospital in New York; instructor in radiology at the Temple University School

of Medicine; formerly radiologist at the Beaver Valley General Hospital, New Brighton, Pa., and the Rochester General Hospital, Rochester, Pa.; died December 1, aged 40, of coronary occlusion.

Horace Herbert William Ard, Dearborn, Mich.; Detroit College of Medicine and Surgery, 1916; interned at the Grace Hospital in Detroit; served during World War I; died December 12, aged 56, of coronary thrombosis.

Albert Josef Baer, Milwaukee; Julius-Maximilians-Universität Medizinische Fakultät, Würzburg, Bavaria, Germany, 1922; member of the American Medical Association; on the staffs of the Mount Sinai, Columbia, St. Michael, St. Mary's and St. Joseph's hospitals; medical director of the Lakeside Laboratories; died in the Lake County Sanatorium, Waukegan, Ill., December 10, aged 46, of tuberculosis.

Frederic Leslie Ball, Brimerton, Wash.; George Washington University School of Medicine, Washington, D. C., 1938; interned at the Swedish Hospital, Seattle; newly elected president of the Kitsap County Medical Society; on the staff of Franklin Delano Roosevelt Hospital; died December 17, aged 43, of coronary thrombosis.

Frank D. Baumann, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1910; served during World War I; died December 11, aged 55, of bronchiectasis.

John Belcher Beebe, Great Barrington, Mass.; Albany Medical College, Albany, N. Y., 1893; a director of the National Mahaiwe Bank, South Berkshire; retired medical examiner; served on the school committee; on the staff of the Fairview Hospital; died January 25, aged 75, of myasthenia gravis.

Claes Gustav Anton Biorkman, New York; College of Physicians and Surgeons, Los Angeles, 1918; served as consulting physician for the Swedish-American Line; interned at the Children's Hospital in Boston; director of physical therapy at the Gotham Hospital, where he died December 25, aged 64, of coronary thrombosis.

Edwin T. Black, Huntsville, Ill.; Rush Medical College, Chicago, 1881; died December 10, aged 86, of heart disease and arteriosclerosis.

Harold LaVerne Blosser, Portland, Ore.; Harvard Medical School, Boston, 1925; diplomate of the National Board of Medical Examiners; president of the state board of medical examiners; member of the council of the Multnomah County Medical Society; medical adviser to the Multnomah division of Oregon Physicians Service and chairman of its supervisory committee; died November 3, aged 46, of coronary thrombosis.

John Edward Bowman, Broken Bow, Neb.; Cotner University Medical Department, Lincoln, 1912; member of the American Medical Association; secretary of the Custer County Medical Society; on the staff of St. Francis Hospital, Grand Island; died in the Bishop Clarkson Memorial Hospital, Omaha, November 15, aged 66, of embolism.

John Harris Brown, Clifton, N. J.; University of Vermont College of Medicine, Burlington, 1914; member of the American Medical Association; died November 28, aged 58, of coronary occlusion.

Turner Harris Brown, Carlisle, Ky.; Ensworth Medical College, St. Joseph, Mo., 1912; member of the American Medical Association; died in the Harrison Memorial Hospital, Cynthiana, December 12, aged 64, of cerebral hemorrhage.

Robert Irving Bullard, Springfield, Ill.; University of Pennsylvania Department of Medicine, Philadelphia, 1903; fellow of the American College of Surgeons; served during World War I; on the staffs of the Memorial Hospital and St. John's Hospital, where he died December 25, aged 67, of asthma.

Richard Carey, Macon, Ga.; Howard University College of Medicine, Washington, D. C., 1894; served as secretary of the medical section of the John A. Andrews Clinical Society; formerly on the staff of the Veterans Administration Facility, Tuskegee, Ala., and consultant to the John Albion Andrew Memorial Hospital, Tuskegee Institute; died in the Presby-

terian Hospital, New York, January 13, aged 73, of sepsis and osteomyelitis.

Belton Drafts Caughman, Columbia, S. C.; University of Maryland School of Medicine, Baltimore, 1911; member of the American Medical Association; served during World War I; died November 30, aged 59, of coronary thrombosis.

Deodatus Tancrede Chagnon, Lawrence, Mass.; M.B., 1903 and M.D., 1904, School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal; died in Chelsea October 2, aged 64, of coronary heart disease and general arteriosclerosis.

Earl Burrell Craig, Elkins Park, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1906; Jefferson Medical College of Philadelphia, 1908; professor and head of the department of gynecology at the Hahnemann Medical College and Hospital of Philadelphia; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; fellow of the American College of Surgeons and the International College of Surgeons; head of the department of gynecology, Hahnemann Hospital, Philadelphia, where he died December 17, aged 63, of carcinoma of the lung.

Thomas Joseph Dion, Quincy, Mass.; M.B., Laval University Faculty of Medicine, Quebec, 1890; M.D., School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1891; member of the American Medical Association; member of the board of health from 1900 to 1905 and of the school board from 1900 to 1903; city physician from 1916 to 1922; on the staff of the Quincy City Hospital; died in the Boston City Hospital November 27, aged 76, of cerebral hemorrhage and bleeding gastric ulcer.

Oscar Albert Dudley, Shrewsbury, Mass.; College of Physicians and Surgeons, Boston, 1907; Massachusetts public health officer for the Worcester district for many years; decorated with the Croix de Guerre by the French government for heroism during World War I; for many years held a commission in the Massachusetts National Guard, retiring as colonel in 1939; died October 28, aged 60, of bronchopneumonia.

John Philip Hawkinson, Crosby, Minn.; University of Minnesota Medical School, Minneapolis, 1926; member of the American Medical Association; served as president of the Upper Mississippi Medical Association; interned at the Minneapolis General Hospital; at one time mayor of Crosby; on the staff of the Miner's Hospital; died October 19, aged 48, of coronary thrombosis.

Arnold Peskind, Cleveland; University of Wooster Medical Department, Cleveland, 1887; Jefferson Medical College of Philadelphia, 1887; president of the East 55th Street Hospital; died October 30, aged 81, of pulmonary infarction.

Abram Edson Platter, Memphis, Mo.; University Medical College of Kansas City, 1896; member of the American Medical Association; past president of the Scotland County Medical Society; served as county health officer; died October 20, aged 78, of hypostatic pneumonia complicated by mitral insufficiency.

Ernest Hansen Smith, Los Angeles; Chicago Homeopathic Medical College, 1891; died November 10, aged 81.

KILLED IN ACTION

Gordon Allen Pracher, Tecumseh, Neb.; University of Nebraska College of Medicine, Omaha, 1932; member of the American Medical Association; served an internship at the Northern Pacific Beneficial Association Hospital in St. Paul; formerly resident physician at the Northern Pacific Hospital, Glendive, Mont., St. Luke's Hospital, St. Louis, Chicago Maternity Center, Chicago, St. Louis Maternity Hospital, St. Louis, and the Community Hospital, Battle Creek, Mich.; commissioned a first lieutenant in the medical corps, Army of the United States, on Oct. 16, 1942; later promoted to captain; killed in action in Italy, May 28, 1944, aged 36.



CAPT. GORDON ALLEN PRACHER,
M. C., A. U. S., 1907-1944

Correspondence

"MALE CLIMACTERIC"

To the Editor:—In THE JOURNAL, Oct. 21, 1944, page 472, is an article entitled "Male Climacteric" by Heller and Meyers. Under "Results of the Therapeutic Test in Patients with High Gonadotropins (Group B)" the authors state that "on resumption of the therapy with testosterone propionate relief of symptoms was again afforded and sexual potency returned. Thus the specificity of therapy was established." This statement is not entirely true. It is admitted that testosterone can produce such a result, but so can estradiol and diethylstilbestrol, for I have been able to study personally three men so treated. Consequently, testosterone propionate is not proved to be a specific for the male climacteric.

The authors list pruritus as a psychic symptom. The pruritus that one sometimes sees with the climacteric, male or female, is a definite deficiency disease syndrome and is far from psychic in the general sense of the word. Actually this syndrome is much commoner after the sixth decade and is generally known as essential senile pruritus. Some years ago Feldman, Pollock and I published a preliminary report of our findings (*Arch. Dermat. & Syph.* 46:112 [July] 1942) in which we found that estradiol or testosterone could abolish this syndrome in both men and women. Since then I have found that methyl testosterone, diethylstilbestrol and various other estrogens can also relieve essential senile pruritus.

The authors assume that there is a decrease in libido and potentia in cases of true male climacteric. Castration in the adult male does not necessarily lead to impotence. I know of a man aged 75 who had had a bilateral orchiectomy for carcinoma of the prostate. This man was receiving 2 mg. of diethylstilbestrol daily when he came in with a textbook picture of anterior gonorrheal urethritis. In one of the cases treated with estradiol, potentia not only remained unimpaired but when the flashes and nervousness were abolished libido actually increased.

Can we scientifically say that hot flushes in the female climacteric are physiologic and the same symptom in the male is pathologic? In other words, a male is not normal if his gonads begin to regress before he departs from this world. Surely we will all agree that the process of aging can become manifest to a clinical degree in various organs and systems at varying times. Just because the testis is one of the last to succumb does not mean that it has now become the site of a pathologic process while a similar state in the ovary is merely physiologic.

The last point I would raise is whether testicular failure per se is responsible for the male climacteric. I have seen 2 patients aged 23 and 25 respectively who had a complete aspermia. Testicular biopsy in each case revealed absence of spermatogenesis and yet neither had any symptoms of the climacteric. Libido and potentia were normal. Further, not every man undergoing bilateral orchiectomy develops a syndrome of the male climacteric. Sometimes these postpubertal castrates do not develop flushes until they reach the age of 40, 50 or more.

In conclusion, I feel that (1) testosterone is not a specific for the male climacteric, since estradiol and diethylstilbestrol are equally efficacious in abolishing the vasomotor phenomena; (2) the male climacteric is not a pathologic but a physiologic process; (3) decrease of sexual potency and/or libido is not necessarily related to the male climacteric but may be coincidental; (4) the climacteric in the male is just as physiologic as it is in the female, and (5) testicular failure per se is not necessarily the etiologic factor for the male climacteric. Rather, it is felt to stem from a disturbance of the heat regulating mechanisms of the body resulting from a drop in level of certain steroids.

A. R. ABARBANEL, M.D., Washington, D. C.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS
EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, February 10, page 355.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 26-28. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery 4.

ALASKA: Juneau, March. Sec., Dr. W. M. Whitehead, Box 561, Juneau.
ARKANSAS: * Eclectic. Little Rock, June 7. Sec., Dr. C. H. Young, 1415 Main St., Little Rock. Medical. Little Rock, June 7-8. Sec., Dr. D. L. Owens, 701 Main St., Little Rock.

CALIFORNIA: Oral. Los Angeles, March 3. Written. Los Angeles, Feb. 27-March 2. Sec., Dr. Frederick N. Scateni, 1020 N. St., Sacramento 14.

COLORADO: * Denver, April 3-6. Final date for filing application is March 19. Sec., Dr. J. B. Davis, 831 Republic Bldg., Denver.

CONNECTICUT: * Homeopathic. Derby, March 12-13. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven. Medical. Examination. March 13-14. Endorsement. March 27. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven.

DELAWARE: Examination. Dover, July 10-12. Reciprocity. Dover, July 17. Sec., Medical Council of Delaware, Dr. J. S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: * Reciprocity. Washington, March 12. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington 1.

FLORIDA: * Jacksonville, June 25-26. Sec., Dr. Harold D. Van Schaick, 2736 S. W. Seventh Ave., Miami 36.

ILLINOIS: Chicago, April 3-5. Superintendent of Registration, Department of Registration and Education, Mr. Philip Harman, Springfield.

KANSAS: * Topeka, Feb. 19-20. Sec., Board of Medical Registration and Examination, 905 N. Seventh St., Kansas City 10.

KENTUCKY: Louisville, June 18-20. Sec., State Board of Health, Dr. Philip E. Blackerby, 620 S. Third St., Louisville 2.

MAINE: Portland, March 13-14. Sec., Board of Registration of Medicine, Dr. A. P. Leighton, 192 State St., Portland.

MARYLAND: Medical. Baltimore, June 19-20. Sec., Dr. J. T. O'Mara, 1215 Cathedral St., Baltimore. Homeopathic. Baltimore, June 19-20. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, March 13-16. Sec., Board of Registration in Medicine, Dr. H. Q. Gallup, 413-F State House, Boston.

MINNESOTA: * Minneapolis, April 17-19. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul 2.

MONTANA: Helena, April 2-4. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

NEW HAMPSHIRE: Concord, March 8-9. Sec., Board of Registration in Medicine, Dr. D. G. Smith, 77 Main St., Nashua.

NEW JERSEY: Trenton, June 19-20. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, April 9-10. Sec., Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.

NORTH DAKOTA: Grand Forks, July 3. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: * Endorsement. Columbus, April. Columbus, June. Sec., Dr. H. M. Pfister, 21 W. Broad St., Columbus.

OKLAHOMA: * Oklahoma City, June 14-16. Sec., Dr. J. D. Osborn, Jr., Frederick.

PENNSYLVANIA: April 10-13. Act. Sec., Bureau of Professional Licensing, Department of Public Instruction, Mrs. M. G. Steiner, 358 Education Bldg., Harrisburg.

RHODE ISLAND: * Providence, April 5-6. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, June 25-27. Sec., Dr. N. B. Heyward, 1329 Blandina St., Columbia.

TEXAS: Galveston, May 7-9. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas 2.

VERMONT: Burlington, June. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: * Richmond, June 20-23. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WEST VIRGINIA: Charleston, Feb. 26-28. Commissioner, Public Health Council, Dr. John E. Offner, State Capitol, Charleston 5.

WISCONSIN: * Milwaukee, June 26-28. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

COLORADO: Denver, March 7-8. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

DISTRICT OF COLUMBIA: Washington, April 23-24. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington 1.

FLORIDA: DeLand, June 1. Final date for filing application is May 17. Sec., Dr. J. F. Conn, John B. Stetson University, DeLand.

IOWA: Des Moines, April 10. Dir., Division of Licensure and Registration, Mr. H. W. Grele, Capitol Bldg., Des Moines.

MICHIGAN: Ann Arbor and Detroit, May 11-12. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

MINNESOTA: Minneapolis, April 3-4. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis 14.

NEBRASKA: Omaha, May 1-2. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln.

OKLAHOMA: Oklahoma City, April 9. Sec., Dr. J. D. Osborn, Jr., Frederick.

OREGON: Portland, March 3. Sec., Board of Higher Education, Mr. C. D. Byrne, University of Oregon, Eugene.

SOUTH DAKOTA: Yankton, June 19. Sec., Dr. G. M. Evans, Yankton.

TENNESSEE: Memphis, March 27-28. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

WISCONSIN: Madison, April 7. Sec., Professor R. N. Bauer, 152 W. Wisconsin Ave., Room 834, Milwaukee 3.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1935 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore

14:461-494 (Sept.) 1944

Studies on Incidence and Nature of False Positive Serologic Reactions for Syphilis. C. R. Rein and Elizabeth S. Elsborg.—p. 461.

Simple Rapid Flocculation Slide Test for Trichinosis in Man and in Swine. Hazel Suessenguth and B. S. Kline.—p. 471.

*March Hemoglobinuria: Report of 2 Cases. R. E. Hobbs.—p. 485.

Multiple Malignant Hemangiomas of Liver. G. H. Andries and D. H. Kaump.—p. 489.

March Hemoglobinuria.—Hobbs reports march hemoglobinuria in 2 soldiers aged 20 and 32 respectively. Both passed bloody urine after long, strenuous marches. The appearance of the hemoglobinuria following marching simplifies the diagnosis. The only significant laboratory findings, besides the hemoglobinemia and hemoglobinuria, were the leukocytosis and the change in the albumin-globulin ratio in the first patient. In the second patient only a total protein determination was done, and it was not possible to subject him to another march. Hemoglobinemia was definite in both cases, giving weight to the theory that a general intravascular hemolysis takes place, instead of hemolysis limited only to the renal blood vessels. Attempts were made to show that the erythrocytes in these cases were more susceptible to mechanical trauma by putting half of an oxalated specimen of blood in a Kahn shaker for periods varying from ten to sixty minutes and keeping the other half of the specimen as a control. Both specimens were then centrifuged, and plasma hemoglobin determinations were made. Control specimens were run on 10 normal men and the changes in the plasma hemoglobin values in the 2 patients and the control group were similar. Feigl found by spectroscopic and chemical methods that half of 27 men whom he examined after an army pack march of 35 kilometers had blood pigment in their serum and urine.

14:495-548 (Oct.) 1944

Pathology and Bacteriology of Streptococcus Endocarditis in Relationship to Sulfonamide Chemotherapy. T. R. Hamilton and Bette W. Hamilton.—p. 495.

Pathology and Bacteriology of Streptococcus Endocarditis in Relationship to Sulfonamide Chemotherapy: II. Effect of Temperature Elevation on Action of Sulfathiazole on Endocarditis Strains of Streptococcus Viridans, Enterococci and Group A Streptococci. Bette W. Hamilton and T. R. Hamilton.—p. 502.

*Endocarditis Due to Brucella: Report of 2 Cases. J. D. Call, A. H. Baggenstoss and W. A. Merritt.—p. 505.

Filtrable Infectious Agent Obtained from Alpha Streptococci Isolated in Studies of Case of Poliomyelitis. E. C. Rosenow.—p. 519.

Platelet Count, Bleeding Time, Clotting Time, Capillary Fragility, Prothrombin Concentration and Clot Retraction in Paretics Receiving Therapeutic Malaria. L. W. Diggs.—p. 534.

*Agranulocytosis Following Thiouracil Administration. M. A. Rubinstein.—p. 540.

Pelger-Huët's Familial Nuclear Anomaly of Leukocytes. A. Van Der Sar.—p. 544.

Endocarditis Due to Brucella.—Call and his associates of the Mayo Clinic consider it surprising that reports of cases of endocarditis due to brucellosis are not more numerous in view of the frequency of Brucella infections in the general population, the frequency of prolonged bacteremia and the established fact that previously damaged cardiac valves are vulnerable to invasion by Brucella despite its low virulence. They report the clinical and pathologic aspects of 2 cases observed by them. Among the peculiarities of this type of endocarditis are the tendency to the involvement of the aortic valve, the tendency to ulceration and perforation, and the granulomatous nature of the visceral and neurologic lesions.

Agranulocytosis Following Thiouracil Administration.—Rubinstein reports the history of a woman aged 47 in whom carcinoma of the thyroid had been diagnosed by biopsy and bone metastases by radiologic evidence. After receiving a series of x-ray treatments, the patient was started on thiouracil to observe its effect on the thyroid nodes. The dose used was 0.2 Gm. four times daily. Under the influence of this treatment the thyroid nodes seemed to decrease in size and to become softer, the patient had less pain and the nodes in the supraclavicular area became softer and smaller. She developed a severe agranulocytosis. Serial bone marrow studies demonstrated arrest of maturation associated with hypoplasia of the myeloid elements. Complete hematologic recovery followed discontinuation of the drug. The return to normal of the bone marrow preceded that of the peripheral blood.

American J. Digestive Diseases, Fort Wayne, Ind.

11:381-414 (Dec.) 1944

Infectious Gastroenteritis: Epidemiologic and Laboratory Study. E. C. Rosenow.—p. 381.

*Dietary Factors in Treatment of Cirrhosis Without Jaundice. A. B. Rimmerman. S. O. Schwartz, II. Popper and F. Steigmann.—p. 401.

Studies of Gastric Secretion During Electric Shock Therapy.—D. Fetter.—p. 405.

Effect of Electric Shock Therapy on Muscle Movements. D. Fetter and H. de Jong.—p. 406.

Dietary Factors in Treatment of Hepatic Cirrhosis.—Rimmerman and his associates selected 10 patients with liver cirrhosis for study by means of liver function tests, and the oral hippuric acid excretion tests, the cholesterol/cholesterol ester partition, quantitative urinary and stool urobilinogen excretion, icterus index, nonprotein nitrogen determination, determination of albumin-globulin ratio, the cephalin cholesterol flocculation test and the Takata-Ara reaction were performed. The hematologic work-up consisted of erythrocyte, leukocyte, platelet and reticulocyte counts; hemoglobin, hematocrit and sedimentation rate determinations; differential counts, and examination of the red cells in the smear preparations. In a number of cases marrow examination was also performed. The patients were given a diet containing 6 Gm. of carbohydrate, 2 Gm. of meat free protein and 1 Gm. of fat per kilogram. The average diet contained over 3,000 calories daily. Yeast was given to provide all members of the B complex. Crude liver extract was administered. Choline was given as lecithin, either in the form of a spread on crackers or in cookies. Other vitamins and minerals were given in a milk mixture. The results of the liver function tests indicated definite improvement in a number of cases. The hematologic picture, except for improvement in anemia, did not show changes commensurate with the subjective improvement.

American Journal of Public Health, New York

34:1133-1216 (Nov.) 1944

Public Health as International Problem. R. B. Fosdick.—p. 1133.

Local Responsibility in Public Health Administration. J. J. Sippr.—p. 1139.

Coordinated School Health Program. Maud A. Brown.—p. 1142.

*Typhoid Vaccine Studies: IX. Intracutaneous versus Subcutaneous Vaccination for Initial Immunization. G. F. Luippold.—p. 1151.

*Some Factors Affecting Early Diagnosis of Pulmonary Tuberculosis: Study of 230 Newly Reported Cases. B. F. Mattison.—p. 1163.

Merit System in Public Health. L. F. Burney and F. M. Hemphill.—p. 1173.

Popular Health Education. A. Massey.—p. 1179.

Intracutaneous versus Subcutaneous Vaccination Against Typhoid.—Luippold shows that the standard subcutaneous course of T. A. B. vaccine consisting of 0.5, 1.0 and 1.0 cc. is more effective in the production of typhoid, paratyphoid A and paratyphoid B protective substances than is one tenth to one fifth of this dosage intracutaneously administered. The standard subcutaneous course of T. A. B. vaccine is more effective in the production of typhoid H and O agglutinins than is one tenth to one fifth of this dosage intracutaneously administered. In small experimental groups there was found no evidence that persistence of agglutinative or protective antibodies at the end of one year is a special attribute of either intracutaneous or subcutaneous administration of T. A. B. vaccine. Although local and systemic reactions are more frequent and pronounced following administration of the standard subcutaneous doses of T. A. B. vaccine than following the intracutaneous

injection of one tenth or one fifth of these doses, the author feels that it is undesirable to risk lowering the protection for the questionable reward of milder reactions. Under the best conditions of immunologic response to artificial immunization the standard method of vaccination cannot be expected to be adequate at all times to the challenge of infecting organisms. Adoption of the intracutaneous administration of reduced doses of T. A. B. vaccine would seem to increase this inadequacy. It is not to be inferred from these conclusions that the intracutaneous administration of T. A. B. vaccine for the establishment of initial immunity is condemned. On the contrary, intracutaneous vaccination has a definite usefulness in its application to the elderly and to allergic persons, in whom severe or serious disturbances may be avoided by the administration of reduced doses, intradermally placed. The author does not consider the standard subcutaneous course of T. A. B. vaccination as the ultimate in antityphoid vaccination procedures. He thinks that intervals between doses, and the doses themselves, would bear investigation.

Early Diagnosis of Pulmonary Tuberculosis.—Mattison selected for study three counties in upstate New York. Two were predominantly rural; the third included a city of about 200,000 population. In addition to the information routinely available from clinic and hospital records, the patients were questioned in detail as to the reasons for their first medical consultation. The time lags were determined between appearance of symptoms and seeking medical care, between the first visit to a physician (for symptoms referable to the chest) and the initial x-ray examination, between that x-ray examination and a definite diagnosis of tuberculosis, and between that diagnosis and reporting of the case to the health department. The observations indicate that case finding among the symptomatic cannot be expected to result in a majority of cases being discovered at a minimal stage; contact examination among associates of diagnosed patients, although yielding a high proportion of early cases, is limited in its scope, especially among urban residents. Mass roentgenography would appear to be needed if substantial reduction of cases which are advanced at the time of discovery is to be achieved.

Annals of Surgery, Philadelphia

120:689-816 (Nov.) 1944

- Experimental Study of Histopathology of Burns, with Particular Reference to Sites of Fluid Loss in Burns of Different Depths. A. W. Ham—p. 689
- Experimental Study of Tannic Acid Treatment of Burns with Particular Reference to Its Effect on Local Fluid Loss and Healing. A. W. Ham—p. 698
- Refrigeration in Clinical Surgery. A. Large and P. Heinbecker—p. 707
- *Effects of Cooling on Experimentally Infected Tissues. J. Bruneau and P. Heinbecker—p. 716
- *Effect of Cooling on Wound Healing. A. Large and P. Heinbecker—p. 727
- Nerve Degeneration Following Prolonged Cooling of Extremity. A. Large and P. Heinbecker—p. 742
- *Hyperinsulinism Treated by Subtotal Pancreatectomy. B. E. Brush and R. D. McClure—p. 750
- Stellate Ganglion Block. New Anterior Approach. D. R. Murphy Jr.—p. 759
- Congenital Atresia of Esophagus with Tracheo-esophageal Fistula. R. A. Daniel Jr.—p. 764
- Varicose Veins. Anatomic Findings and Operative Procedure Based on Them. R. S. Sherman—p. 772
- Improved Method for Collecting, Centrifuging and Pooling Blood Plasma. H. J. Walder and H. E. Grady—p. 785
- Peripheral Circulation During Tourniquet Shock Syndrome in Rat R. Chambers, B. W. Zweifach and B. E. Lowenstein—p. 791
- Proposed Alteration in Knee Joint of Prosthesis for Below Knee Amputation. R. Keith—p. 803
- Racial Distribution of Cancer. II. Tumors of Kidney, Bladder and Male Genital Organs. R. Schrek—p. 809

Effects of Cooling on Experimentally Infected Tissues.—Bruneau and Heinbecker describe investigations to determine the effects of reduced temperatures on both the local tissue response and the organisms responsible for it, and to determine the eventual course of a local infection as altered by a temporary period of cooling. A concentrated suspension of *Streptococcus hemolyticus* in broth was used to produce a localized infection. Mongrel dogs weighing from 4 to 8 Kg. were used as experimental animals. The inoculated limbs were then cooled to 6 C. (42.8 F.) for various lengths of time. The control animals were injected in a similar fashion and were placed in

cages at room temperature. The authors found that the exposure of inoculated tissues to a temperature of 6 C. for periods up to ninety-six hours results in a definite inhibition of the usual inflammatory response to *Streptococcus hemolyticus*. This inhibition is evidenced by the gross and microscopic picture observed after cooling. It is further substantiated by the fact that no significant decrease in the number of organisms injected is observed under these conditions. At room temperature the decrease in the number of bacteria follows a logarithmic curve. Cooling delays the rate of destruction of bacteria in living tissue. Gelatinous edema, vascular congestion and minimal diapedesis were noted throughout the cooled limb, even at a distance from the site of inoculation. The degree of edema seemed related to the length of the cooling period. These changes were also observed in limbs that were cooled without previous inoculation. This would suggest that some of the reactive changes observed in the tissues are due to the effects of cold itself. This edema, with temporary anesthesia and loss of motor function and the occasional appearance of necrotic skin lesions after the return of the limb to a normal environment, bears a striking resemblance to the clinical syndrome of immersion foot. At the site of inoculation the pathologic findings were similar but slightly more severe. The evidence seems to indicate that the application of cold for periods up to four days will not have a beneficial effect on the course of a localized infection. At most, a relative status quo is present as long as the reduced temperature is maintained. However, the diffuse edema argues against regarding this condition as a merely innocuous suspension of bacterial and tissue activity. The authors consider it evident that the clinical application of cold (6 C.) to infected tissue will have no therapeutic value in itself.

Effect of Cooling on Wound Healing.—Large and Heinbecker carried out experiments on dogs to study the effects of prolonged refrigeration on wound healing. They determined the nature of the healing process in clean incised wounds of the skin and subcutaneous tissues of the forelimb after cooling to 6 C. for a period of twenty-four to seventy-two hours, using similar incisions in the opposite limb as controls. The healing process was studied by measurements of the tensile strength and by microscopic examination of the wounds at varying intervals. The results show that during the cooling period there is no reaction on the part of the tissues to the injury inflicted by the incision and that subsequently there is a definite lag in the healing of the wounds, the degree of delay varying with the duration of the cooling period. In wounds treated by delayed suture after cooling for twenty-four or forty-eight hours the incidence of infection is much greater than in control incisions maintained at normal temperatures. The results of these experiments, together with those of Bruneau and Heinbecker, indicate that harmful effects result from prolonged refrigeration of living tissue. It is felt, therefore, that refrigeration anesthesia is not ideal for amputations. If the aim is to diminish absorption from a gangrenous region by local cooling, this can be accomplished by refrigerating the limb below the desired amputation level in order that the anesthesia so induced may permit the application of a tight tourniquet. After restorative measures have been effective, amputation then can be carried out under ordinary anesthesia above the level of cooling without harmful sequelae. It has been suggested that wounds of the extremities incurred on the battlefield be refrigerated during transportation and until proper emergency surgical treatment can be instituted, an interval of many hours or even days. Because of the increased incidence of wound infection after the cooling period shown to occur in the described experiments, it is recommended that wounds sustained on the battlefield should not be treated by refrigeration unless there is no hope of saving the part.

Subtotal Pancreatectomy in Hyperinsulinism.—Brush and McClure say that the criteria for a diagnosis of islet cell adenoma and the indication for operation have been described by Whipple, who stressed that the syndrome is characterized by a triad of nervous system disorders, such as confusion, coma, convulsions and collapse coming on in the fasting state while the blood sugar level is 50 mg. per hundred cubic centimeters or less, and the relief of symptoms by the administration of dextrose. When the blood sugar does not fall to 50 mg. per hundred cubic centimeters during an attack, a search for causes other than islet

adenoma must be made. When the blood sugar during an attack is above 50 mg. per hundred cubic centimeters a diet low in carbohydrate, 50 Gm. or less, and high in protein will often give relief, because while 50 per cent of the protein may yield dextrose this conversion takes place at a slow, even rate and this fact, as well as the slower absorption rate of protein, prevents great elevation of the blood sugar, which would in turn stimulate the pancreas. It has been shown by Conn that the dextrose tolerance curve is influenced by the antecedent diet. A dextrose tolerance test taken after a proper preparatory diet is of diagnostic value in hypoglycemia. Organic and functional hyperinsulinism both give a low dextrose tolerance curve, and the organic cases usually have an abnormally low fasting level. Studies on the utilization of the injected dextrose are especially indicated in borderline cases. The method which the authors have used is that suggested by Johnston of taking a basal metabolic rate prior to injection of dextrose and repeating the metabolism test at thirty minutes, one hour, two and one half hours and three hours after the injection. Urine samples are examined for nitrogen and sugar if the proportion of carbohydrate, fat and protein utilized is to be determined. The calculation from these studies of the respiratory quotient gives diagnostic information and is also of benefit in following the patients postoperatively. These studies may aid in determining the advisability of performing a subtotal pancreatectomy in patients who do not conform exactly to the "Whipple triad" and yet have the symptoms of hyperinsulinism. The authors present the histories of 2 patients with spontaneous hypoglycemia in whom no island tumor could be found. The highly satisfactory results obtained following subtotal resection in these cases make the authors confident that no actual islet tumor existed. They emphasize that a large amount of pancreas must be resected. The removal of a large amount of the pancreas does not seem to cause any subsequent digestive or metabolic disturbance.

Archives of Dermatology and Syphilology, Chicago

50:289-354 (Nov.) 1944

- *Hazards of External Use of Sulfonamide Compounds. E. W. Abramowitz.—p. 289.
- Occurrence of Partial Albinism and Nystagmus in Negroes: Report of 2 Cases. L. J. A. Loewenthal.—p. 300.
- *Agranulocytosis Following Mapharsen Therapy: Report of 2 Cases. M. Kasich.—p. 302.
- Poison Ivy Smoke: Experiments Demonstrating that Poison Ivy Smoke is Not Cause of Clinical Ivy Dermatitis. J. B. Howell.—p. 306.
- John Gorrie, M.D., and an Early Case of Keloid. I. S. Cutter.—p. 308.
- Effect of Grenz Rays on Leprous Infiltrations: Report of Attempt to Influence Leprous Infiltrations by Roentgen Rays of Long Wavelength. F. Sagher.—p. 311.
- Spectrographic Analysis of Gold in the Skin Following Treatment of Lupus Erythematosus. L. G. Beinbauer, F. M. Jacob and P. L. Beebe.—p. 315.
- *Aplastic Anemia with Acute Agranulocytosis and Thrombopenic Purpura Complicating Mapharsen Therapy: Report of Case, with Pathologic Observations. H. E. Freeman.—p. 320.
- Granuloma Annulare and Measles. N. M. O'Farrell.—p. 323.
- Unsuccessful Treatment of American Leishmaniasis with Penicillin: Report of Case. J. S. Snow.—p. 324.
- Dermatitis From Penicillin: Report of 2 Cases. G. W. Binkley, and A. Brockmole.—p. 326.

Hazards of External Use of Sulfonamide Compounds.

—Abramowitz says that the indiscriminate use of sulfonamides is questionable not only because of the uncertain results but because of the potential hazards that may develop. The innumerable preparations containing sulfonamide compounds, usually sulfathiazole, generally shorten the duration of impetigo, ecthyma, chancreoid and possibly other types of primary and secondary pyodermas, but this advantage is offset by the subsequent complications that may appear in these as well as in other dermatoses (eczematous eruptions, varicose ulcers, burns and minor surgical injuries) and minor infections of the mucosal orifices. These complications are: (1) development of a local or generalized dermatitis (allergic sensitization), (2) appearance of photosensitization to sunlight and ultraviolet rays, (3) interference with the action of the roentgen rays, (4) delay in wound healing time, (5) local sanguineous oozing, (6) interference with the action of sulfonamide compounds by local anesthetics of the procaine series and the chemically related vitamin para-aminobenzoic acid, (7) resistance to sulfonamide therapy and (8) rendering the patient vulnerable to the subsequent use of the

drug when most needed. The author believes that reactions from the topical application of the sulfonamide drugs are more frequent than is suspected. Wider dissemination of the knowledge of reactions and their consequences is desirable. Some restrictions should be adopted to prevent the indiscriminate use of sulfonamide ointments and other pharmaceutical forms for external use.

Agranulocytosis Following Mapharsen Therapy.—

Kasich reports 2 cases of agranulocytosis, both occurring in Negro soldiers following mapharsen therapy for syphilis. The agranulocytosis in these 2 cases can be ascribed to the mapharsen with a fair degree of certainty. Although idiopathic granulocytopenia has been described, it is unusual. The patients had taken no other drug known to cause granulocytopenia. They had been given five doses of mapharsen in thirteen and twenty-one days and received 0.28 and 0.27 Gm. respectively. The mechanism by which drugs produce agranulocytosis is unknown. Individual susceptibility appears to be the most important factor. Although agranulocytosis seems to be an infrequent complication of mapharsen therapy, frequent leukocyte counts should be made on all patients receiving this drug. The treatment in the reported cases consisted in the administration of sulfadiazine, pentnucleotide and transfusions of citrated blood. Both patients made uneventful recoveries.

Aplastic Anemia, Acute Agranulocytosis and Thrombopenic Purpura Complicating Mapharsen Therapy.—

In the case reported by Freeman a man aged 37 gave a history of having had syphilis for twenty years and of having taken treatments irregularly over a period of two years until January 1943. When treatment was first begun he had several febrile reactions, but thereafter he had tolerated his treatments. Neosarsphenamine was the arsenical employed. In March 1943 the patient entered military service. He was found to have a positive serologic reaction and further therapy was advised. Mapharsen was the arsenical used. On May 18, 1943 the patient first noticed a purpuric eruption on the arms and forearms. He was at that time receiving mapharsen (0.06 Gm. twice weekly) and bismuth subsalicylate weekly. After he received the tenth injection of mapharsen, the purpura appeared, but two more injections of mapharsen were given. The total amount of recent treatment was five injections of the bismuth preparation and twelve of mapharsen. The author saw the patient ten days after the onset of purpura and four days after the last dose of mapharsen had been administered. In view of the history and clinical observations the following diseases were considered after preliminary examination: (1) blood dyscrasia due to mapharsen (arsenical thrombopenia?), (2) infectious mononucleosis, (3) monocytic leukemia and (4) purpura of other origin than that of drug intoxication. The first blood smears indicated that the severe anemia was aplastic, with agranulocytosis. The patient's condition became progressively worse and he died on his ninth day in the hospital, nineteen days after he first noticed his purpura. The etiologic factor in this case is considered to have been the trivalent arsenical. The patient had received bismuth subsalicylate, but he had none of the symptoms of salicylate intoxication. No evidence of infectious mononucleosis or of aleukemic leukemia was found.

Archives of Neurology and Psychiatry, Chicago

52:341-430 (Nov.) 1944

- Studies in Reflexes: History, Physiology, Synthesis and Nomenclature. Study II. R. W. Wartenberg.—p. 341.
- Id.: Study III. R. W. Wartenberg.—p. 359.
- *Intramedullary Lesions of Spinal Cord: Study of 68 Consecutive Cases. W. W. Woods and A. M. Pimenta.—p. 383.
- Cerebrospinal Fluid Pressure Under Conditions Existing at High Altitudes: Critical Review. E. W. Peterson, M. B. Bornstein and H. H. Jasper.—p. 400.
- Detection of Latent Babinski Sign with Scopolamine. L. H. Margolis and R. W. Graves.—p. 409.
- Basilar Impression Resembling Cerebellar Tumor: Case. D. L. Curtis and A. Verbrugghen.—p. 412.

Surgical Treatment of Intramedullary Lesion of Spinal Cord.—Woods and Pimenta report 68 consecutive cases of intramedullary lesion of the spinal cord treated surgically. They stress that: 1. The surgical treatment of intramedullary tumors of the cord produces unexpectedly good results when the location and size, and often the infiltrative character, of these neoplasms

plasmas are taken into consideration 2. The comparatively slow growth of these tumors offers promise of better results in the future, with the attainment of early diagnosis and with surgical intervention before irreversible damage to the spinal cord has occurred. 3. The best surgical results are obtained when the tumor can be totally excised without damage to the cord. If this is not possible because of lack of demarcation, decompressive vertical incision of the posterior surface of the cord over the entire extent of the tumor should be attempted. The concept that an intramedullary tumor encountered at operation is inoperable and is best left alone, or only a specimen taken for biopsy, is unjustifiable. 4. Intensive roentgen therapy following operation appears to be of benefit with certain gliomas of the spinal cord. 5. Ependymoma, because of its frequent demarcation and the apparent limitation of its growth, offers a better prognosis than the more invasive gliomas. 6. Intramedullary dermoid, because of its slow growth and encapsulation, lends itself either to total or to partial excision. 7. The surgical treatment of syringomyelia, with or without roentgen therapy, has not produced the hopeful results previously reported in the literature.

Archives of Pathology, Chicago

38:287-364 (Nov.) 1944

- Experimental Investigation of Renal Circulation E. S. Shonko and F. C. Mann—p. 287.
Renal Phosphatase in Choline Deficiency. M. Wachstein—p. 297.
Histologic Analysis of Arteriosclerosis R. Altschul—p. 305.
Modified Technic for Removal of Nasopharynx and Accompanying Organs of Throat. P. B. Szanto—p. 313.
Studies on Cancer: I Relationship of Function, Light and Temperature to Growth by Mitosis C. M. Blumenfeld—p. 321.
Experimental Studies in Cardiovascular Pathology. X Effects of Repeated Intravenous Injections of Solutions of Digitoxin on Blood and Internal Organs of Dogs and Rabbits W. C. Hueper—p. 326.
Identification of Person and Determination of Cause of Death From Skeletal Remains J. R. Dutra—p. 339.
Arteriosclerosis. Anoxemia Theory W. C. Hueper—p. 350.

Archives of Physical Therapy, Chicago

25:645-698 (Nov.) 1944

- Kenny Treatment Combined with Neurotripsy in Care of Poliomyelitis J. W. McFarland, H. E. Bilh Jr., G. Mosser Taylor and C. W. Dail—p. 645.
Ultraviolet Blood Irradiation Therapy in Acute Poliomyelitis. Preliminary Report on 58 Consecutive Cases G. Miley—p. 651.
Comprehensive Rehabilitation Center. W. J. Zeiter, S. Gamble and B. Greve—p. 657.
Artificial Fever Chemotherapy: II. Arterial Oxygen Saturation R. M. Craig, G. N. Schwemlein and H. W. Kendell—p. 665.
Physical Basis of Air Disinfection by Ultraviolet Energy. L. J. Buttolph—p. 671.

California and Western Medicine, San Francisco

61:229-276 (Nov.) 1944

- Communicable Diseases in Wartime. E. B. Shaw—p. 235.
Communicable Disease Trends in California W. L. Halverson and H. L. Wynns—p. 236.
Diphtheria, Scarlet Fever and Measles Their Management P. Hamilton—p. 238.
Meningococcus Disease. E. B. Shaw—p. 240.
Acute Anterior Poliomyelitis H. Brainerd—p. 242.
Tropical Diseases H. G. Johnstone—p. 244.
"Filth" Diseases. K. F. Meyer—p. 250.
Tuberculosis in Wartime S. J. Shipman—p. 254.

Cancer Research, Baltimore

4:737-842 (Dec.) 1944

- Ribonucleic Acid and Heterochromatin in Epidermal Carcinogenesis J. J. Bieseke—p. 737.
Alkaline Phosphatase in Mouse Skin Under Methylcholanthrene Treatment. J. J. Bieseke and Marguerite McAfee Bieseke—p. 751.
Effect of Certain Lipids on Carcinogenicity of p-Dimethylaminoazobenzene J. A. Miller, B. E. Kline, H. P. Rusch and C. A. Baumann—p. 756.
Some Factors That Influence Growth of Neoplastic Cells B. E. Kline and H. P. Rusch—p. 762.
Prothrombin Activity in Rats with Hepatic and Other Tumors J. B. Field, C. A. Baumann and K. P. Link—p. 768.
Urinary Excretion of Estrogens, 17 Ketosteroids, Creatine and Creatinine in High and Low Mammary Tumor Strains of Mice D. A. Karnofsky, I. T. Nathanson and J. C. Aub—p. 772.
Genetics and Linkage Relationship of Inherited Susceptibility to Mammary Cancer in Mice J. J. Bittner—p. 779.
Metabolic Studies in Mouse Leukemia II Metabolism of Tissues of Mice with Lymphoid Leukemia A. E. Hall—p. 785.

Connecticut State Medical Journal, Hartford

8:725-802 (Nov.) 1944

- Horace Wells W. H. Jacobs—p. 729.
Anesthesia for War Surgery M. Saklad, E. Saklad and Priscilla Selman—p. 735.
*Continuous Spinal Anesthesia—Observations on 1,000 Cases. J. Magnano—p. 743.
Anesthesia in Cesarean Section, with Special Reference to Prevention of Atelectasis of Newborn. J. M. Freiheit and J. Magnano—p. 748.
Discovery of Anesthesia. Analysis of Contributions of Davy, Faraday, Hickman, Long, Wells, Morton and Jackson W. H. Archer—p. 756.

8:803-894 (Dec.) 1944

- Nonteaching Hospital and Medical Education R. Fitz—p. 803.
Future of Medical Care in the United States L. H. Bauer—p. 817.
Educational Needs and Relocation Plans of Returning Medical Officers. Grace Mooney and F. L. Roth—p. 821.
Well Baby Clinic—Fiji Islands R. V. Fuldner—p. 824.

Continuous Spinal Anesthesia.—Spinal anesthesia has been used in the Middlesex Hospital in Middletown, Conn., in 8,197 cases. Six thousand of these cases, according to Magnano were done under "one dose" spinal anesthesia and 2,197 cases under continuous spinal anesthesia. In the first 1,000 cases the operation was begun and finished under spinal anesthesia, but in the longer procedures the spinal anesthesia had to be supplemented by administration of pentothal sodium. The oldest patient in this group was 90 years, the youngest 15 days. A subtotal gastrectomy required six hours of anesthesia. The shortest procedure, incision and drainage of an abscess, took about five minutes. The former case required 1,100 mg. of procaine hydrochloride and the latter 50 mg. In 406 appendectomies the average dose of procaine used was 157 mg. The minimum dose was 75 mg. and the maximum dose was 500 mg. The weight of the patient does not determine the dose of procaine hydrochloride necessary. In 51 cholecystectomies the average dose of procaine administered was 283 mg. As a rule more procaine is required for work in the upper abdomen than in the lower abdomen. Seventy-six cesarean sections were done under continuous spinal anesthesia. The author gives these reasons for regarding this method as the anesthetic of choice in cesarean operations: 1. The mother alone gets the anesthesia and the fetus is not affected. 2. The anesthetic can be withdrawn if the patient shows signs of toxicity. 3. The abdominal muscles are relaxed. 4. The intestine is contracted. 5. The child cries immediately after delivery. 6. The uterus contracts well after delivery because the nerve control of the uterus is not blocked. There were 118 gynecologic operations, 69 herniorrhaphies, 68 orthopedic operations, 36 hemorrhoidectomies, 14 pilonidal cyst operations, 11 prostatectomies and others. The blood pressure showed less fluctuation than in the one dose method of spinal anesthesia. The dosage can be individualized in this method, and the drug can be changed if necessary. He believes that this method of spinal anesthesia is safer and more controllable than the one dose method.

Delaware State Medical Journal

16:173-184 (Nov.) 1944

- Preventive Medicine J. M. Foulger—p. 173.
Pruritus: Side Effect of Penicillin Therapy. F. A. Freyhan—p. 177.

Diseases of Chest, Chicago

10:471-552 (Nov.-Dec.) 1944

- *Cancer of Esophagus. Original Technic for Total Esophagectomy. E. Vasconcelos—p. 471.
Lower Lung Field Tuberculosis S. S. Remendick, B. Friedman and H. F. Schwartz—p. 481.
Diagnosis of Bronchiectasis Clinical and Roentgenologic Observations M. H. Jores and S. A. Robins—p. 489.
Ricketts' Sarcoma W. L. Meyer—p. 509.
Chest X Ray. D. G. Morse—p. 515.
Problem of Tuberculosis in Average Community. II. J. Nimetz—p. 528.

Total Esophagectomy in Cancer of Esophagus.—Vasconcelos describes and illustrates in detail a new technic for total esophagectomy. Peridural is preferred to general anesthesia. The operation consists of an abdominal, a thoracic and a cervical stage. A preliminary artificial pneumothorax is established in the interval between the abdominal and the thoracic stage. This is considered to be an essential preparation before opening the thorax. In the opinion of the author this new technic completely alters the prognosis of total extirpation of the esophagus and permits a more optimistic attitude because of the reduction in complications and mortality rate.

Florida Medical Association Journal, Jacksonville**31:257-277 (Dec.) 1944**

- Gynecologic Problems Beginning at Forty. C. J. Fair.—p. 257.
 Stab Wounds with Weapon Remaining in Place: Report of 3 Cases.
 C. B. Mabry and J. Benham Stewart.—p. 260.
 Vale, Alma Mater. L. J. Karnosh.—p. 263.

Georgia Medical Association Journal, Atlanta**33:297-324 (Oct.) 1944**

- Placenta Previa: Report of 170 Cases. J. T. Persall and R. Torpin.—p. 297.
 Conservative Surgery in Treatment of Uterine Displacement. E. H. Greene.—p. 302.
 Changing an "Old Southern Custom." E. R. Watson.—p. 306.
 Eye Injuries at Aircraft Plant. A. Callahan.—p. 312.

33:325-354 (Nov.) 1944

- Pentothal Sodium Anesthesia. R. L. Kennedy.—p. 327.
 Long, Eve and Dugas: The Ether Controversy. J. Krafka Jr.—p. 330.
 Nurse Participation in Industrial Hygiene Program. L. M. Petric.—p. 334.

Indiana State Medical Assn. Journal, Indianapolis**37:555-578 (Oct.) 1944**

- President's Address. J. T. Oliphant.—p. 555.
 Roentgen Therapy of Functional Amenorrhea and Sterility. J. A. Campbell.—p. 557.
 Effect of Exercise on Electrocardiogram in Adolescent Boys. D. L. Urschel.—p. 561.
 Pertussis Agglutination by Rapid Method. H. M. Powell.—p. 563.

Journal of Allergy, St. Louis**15:379-456 (Nov.) 1944**

- Pollen Dehydrator. A. B. Berresford and R. A. Cooke.—p. 379.
 *Relationship Between Spontaneous Allergic Conditions and Ascorbic Acid: Experiment Employing Skin Tests and Ascorbic Acid on Subjects with Hay Fever. H. L. Newbold.—p. 385.
 Cerebrovascular Accidents Following Epinephrine Injections: Report of 2 Cases. I. L. Applebaum.—p. 392.
 Urticaria Caused by Chlorinated Drinking Water. M. J. Gutmann.—p. 395.
 Recent Advances Concerning Histamine Problem. M. Rocha e Silva.—p. 399.
 Significance of Antibodies in Hypersensitive States. Florence E. Sammis.—p. 414.

Allergic Conditions and Ascorbic Acid.—Newbold attempted to investigate the question whether massive doses of ascorbic acid given orally would have an effect on the skin test in a definite allergic condition regardless of the deficiency or the adequacy of the vitamin in the subject. The plasma levels of ascorbic acid were determined by the Mindlin-Butler method in most cases. The 8 subjects were young men who had suffered from periodic attacks of hay fever since childhood. A total of forty-three control skin tests were made on these subjects with an extract of short ragweed. The tests were not made during an active period of hay fever. The plasma levels of ascorbic acid were measured at the time of most skin testing. At various intervals large amounts of ascorbic acid were given over a period of several days, and more skin tests were made. The plasma level of ascorbic acid was likewise measured as previously. The average diameters of the erythemas of the two sets of data were compared. There was no evidence that ascorbic acid had any significant effect on allergic skin reactions caused by intracutaneous injection of an extract of short ragweed pollen. It is realized that the experiment in itself cannot entirely prove that ascorbic acid can have no clinical value.

Journal of Immunology, Baltimore**49:251-320 (Nov.) 1944**

- Studies on Inflammation: V. Observations on Kinetics of Cellular Cathepsin II from Organs of Normal Rabbits and Those Infected with Virulent and Nonvirulent Tubercle Bacilli. C. Weiss and Nellie Halliday.—p. 251.
 Isolation of Influenza Virus by Intra-Amniotic Inoculation of Chick Embryos with Untreated Throat Washings. E. R. Rickard, Minnie Thiessen and J. H. Crowley.—p. 265.
 Chemoprophylactic and Therapeutic Action of Wide Variety of Chemical Compounds on two Neurotropic Virus Infections in Mice. S. D. Kramer, H. A. Geer and D. A. Szobel.—p. 273.
 In Vitro Anaphylactic Response to Polysaccharide and Monosaccharide Simple Antigens. D. H. Campbell and G. E. McCasland.—p. 315.

Journal of Neurophysiology, Springfield, Ill.**7:325-442 (Nov.) 1944**

- Note on Two Components of Dorsal Root Potential. F. T. Daa and T. P. Feng.—p. 327.
 Receiving Arcs of Tactile, Auditory and Visual Systems in Cerebellum. R. S. Snider and A. Stowell.—p. 331.
 Spreading Depression of Activity in Cerebral Cortex. A. A. P. Leão.—p. 359.
 Pial Circulation and Spreading Depression of Activity in Cerebral Cortex. A. A. P. Leão.—p. 391.
 Influence of Conditioning Nerve Stimuli on Relayed Volleys Evoked from Spinal Cord: Periodic Facilitation and Inhibition. C. G. Bernhard.—p. 397.
 Sustained Facilitation and Postinhibitory Rebound of Relayed Volleys in Spinal Cord. C. G. Bernhard.—p. 409.
 Midbrain Auditory Mechanisms in Cats. H. W. Ades.—p. 415.
 Paralysis with Hypotonicity and Hyperreflexia Subsequent to Section of Basis Pedunculi in Monkeys. B. W. Cannon, H. W. Magoun and W. F. Windle.—p. 425.

Journal of Urology, Baltimore**52:375-474 (Nov.) 1944**

- Justice and the Future of Medicine. W. Berge.—p. 375.
 Urologist Looks at Changing Trends in Medical Practice. H. I. Kretschmer.—p. 389.
 Twelve Year Cure Following Nephrectomy for Adenocarcinoma and Lobectomy for Solitary Metastasis. J. J. D. Barney.—p. 406.
 Long Standing Hydronephrosis with Associated Urologic Disease: Case. V. J. O'Connor.—p. 408.
 Renal Complications of Reiter's Disease. F. H. Colby.—p. 415.
 Renal Ectopia: Report of 6 Cases. O. S. Culp.—p. 420.
 Cortical Infections of Polycystic Kidneys. A. R. Stevens.—p. 430.
 Vesicoureteral Reflux: Report of Case Cured by Operation. G. Prather.—p. 437.
 Total Cystectomy for Carcinoma. R. C. Graves and R. S. Thomas.—p. 443.
 Superiority of Sump Drain in Suprapubic Prostatectomy. L. E. McCrea.—p. 455.
 Treatment of Stricture of Urethra with High Frequency Cutting Current. G. R. Livermore.—p. 462.
 Two Cases of True Hermaphroditism. C. M. McKenna and J. I. Kiefer.—p. 464.
 Surgery of Penis in Lymphogranuloma. W. H. Toulson.—p. 470.
 Proteolytic Enzymes and Acid Phosphatase in Prostatic Fluid in Chronic Prostatitis. C. Huggins and D. F. McDonald.—p. 472.

Northwest Medicine, Seattle**43:313-350 (Nov.) 1944**

- Industrial Health of Tomorrow. D. F. Irwin.—p. 316.
 Government's Responsibility in Industrial Health. J. L. Jones.—p. 320.
 Medical Considerations of Industrial Health. W. B. Penney.—p. 323.
 Benzene Poisoning. T. E. P. Gocher.—p. 325.
 Empiricism and Pioneer Medicine. R. A. Fenton.—p. 327.
 Tuberculous Myocarditis. W. B. Dublin.—p. 330.
 War Injuries of Bones. E. A. LeCocq.—p. 331.

43:351-386 (Dec.) 1944

- Phlebotrombosis of Axillary and Subclavian Veins. F. J. Ditter and J. H. Walker.—p. 356.
 Joint and Fracture Problems of Accident Commission. W. C. Smith.—p. 360.
 Treatment of Bilateral Retinoblastoma. A. F. de Roeth.—p. 364.
 New Waterproof Plastic Cast. R. Anderson.—p. 365.
 Recent Experiences with Filariasis. J. W. Haviland.—p. 371.
 Surgical Arrest of Massive Bleeding Peptic Ulcer. D. Metheny and A. Stranahan.—p. 376.

Pennsylvania Medical Journal, Harrisburg**48:193-320 (Dec.) 1944**

- Acute and Chronic Symptoms and Diagnosis of Movable Kidney: Conservative and Radical Treatment. C. L. Deming.—p. 207.
 Thiouracil in Medical Management of Hyperthyroidism. J. T. Beardwood Jr. and D. C. Levinson.—p. 212.
 *Stab Wound of Heart: Report of Successful Repair of Laceration of Left Auricle. L. L. Thompson Jr.—p. 218.

Successful Repair of Laceration of Left Auricle.—A soldier aged 25 was admitted to the hospital with a history of having been accidentally stabbed in the left side of the chest about an hour previously with a pocket knife. The wound was 2 cm. lateral and 2 cm. inferior to the left nipple in the fifth interspace and was sucking in character. The patient was given 2 units of blood plasma, the wound of entrance was excised and the heart was exposed. In the pleural cavity a number of large clots were seen lying against the medial aspect of the left lung. There was approximately 400 cc. of noncoagulated blood in the cavity. A laceration, not readily apparent, about 1.5 cm. in size was found in the superolateral aspect of the anterior pericardium. The laceration was enlarged and one of equal size was found

completely penetrating the wall of the left atrium. With some difficulty the auricular wound was closed with three interrupted sutures. At the moment of completion of the auricular suture respiration stopped and the ventricular contractions became quite slow and irregular. On initiation of artificial respiration by the anesthetist and injection into the myocardium of the right ventricle of 0.5 cc. of 1:1,000 epinephrine solution respiration started and the heart began to contract regularly. The convalescence was complicated by a pulmonary infection. Thompson reports that electrocardiographic changes indicative of pericarditis are evident two months postoperatively, although clinically the patient has recovered.

Public Health Reports, Washington, D. C.

59:1543-1574 (Dec. 1) 1944

*Fluoride Domestic Waters and Systemic Effects: I. Relation to Bone Fracture Experience, Height and Weight of High School Boys and Young Selectees of Armed Forces of United States. F. J. McClure. —p. 1543.

Fluoride Waters and Systemic Effects.—McClure studied the skeletal effects of dietary fluorine on the height, body weight and bone fracture experience in selected groups of 1,458 high school boys and 2,529 young men taking the physical examination at United States armed forces induction centers. The significance of these studies relates to two facts: (a) Many drinking waters in the United States and other parts of the world contain fluorides; (b) it has been suggested that optimum quantities of fluoride might be added to domestic water supplies or directly to children's diets for the partial control of dental caries. The number of fractures per hundred among high school boys varied from 21.3 to 32.4. There was no relation of fracture experience to fluoride exposure. The height-weight data were not related to fluoride exposures. The bone fracture experience of young men varied from about 25 to 30 fractures per hundred men averaging about 18 to 25 years of age. An experience of more than 1 fracture varied from 1.7 to 4.8 men per hundred men. These data on bone fracture experience for both men and boys suggest strongly that no serious impairment in skeletal performance, as might be manifest in number of broken bones, seems related to exposure to fluoride domestic waters of the concentrations studied in this survey. Texas men exposed to highest water-fluorine concentrations and Oklahoma men averaged 69.6 and 69.4 inches in height (weight 149.0 and 142.4 pounds), respectively. Men from rural Indiana and Indianapolis averaged 68.1 and 68.3 inches in height, 146.8 and 146.2 pounds in weight, respectively. Washington, D. C., men averaged 69.3 inches and weighed 151.2 pounds on the average. New Hampshire men were 67.3 inches tall and weighed 149.6 pounds on the average. These height-weight figures showed no relation to fluoride exposure.

Surgery, St. Louis

16:633-814 (Nov.) 1944

- Diffuse and Adenomatous Goiter and Goiter Induced by Various Agents. A. C. Broders and Edith M. Parkhill. —p. 633.
Diagnosis of Thyrotoxicosis. W. O. Thompson. —p. 647.
Heart and Circulation in Patients with Hyperthyroidism. R. W. Keeton. —p. 657.
Medical Management of Thyrotoxicosis. D. P. Barr. —p. 668.
Chemotherapy in Hyperthyroidism. E. B. Astwood. —p. 679.
Factors Influencing Operability and Mortality Rate in Goiter. W. H. Cole. —p. 688.
Anesthesia in Thyroid Surgery. R. C. Adams and C. F. Dixon. —p. 700.
Technic of Thyroidectomy. F. H. Lahey. —p. 705.
Drainage in Thyroidectomy. D. Guthrie and I. Schimmel. —p. 725.
*New Plan in Operative Treatment of Patients with Severe Hyperthyroidism: Use of Spinal Anesthesia as Adjunct to Their Preoperative Care. C. E. Rea. —p. 731.
Management of Postoperative Complications in Thyroid Surgery. H. M. Clute, F. R. Kenney and B. E. Hamilton. —p. 739.
Problem of Thyroid Crisis. R. W. Buxton. —p. 748.
Goiter in Children. J. deJ. Pemberton and B. M. Black. —p. 756.
Goiter in the Southern States. H. Mahorner. —p. 764.
Thyroiditis. N. A. Womack. —p. 770.
*Malignant Goiter. R. Ward. —p. 783.
Parathyroid Tetany. C. M. MacBryde. —p. 804.

New Plan in Treatment of Hyperthyroidism.—Twenty patients with severe hyperthyroidism were treated by Rea with a combination of intravenous pentothal, spinal and inhalation anesthesia. The purpose of the spinal anesthesia was to inhibit medullary adrenal releases during the operation and thus to

forestall the occurrence of an immediate severe postoperative reaction. It is not intended to secure anesthesia to a level which would permit the operation being done under this agency alone. The adrenals are important, as suggested by the reactions accompanying the so-called Goetsch test. If there were signs of hyperadrenalism, one would expect an increase in the blood sugar. Examination of the blood sugar did not reveal any increase, probably because of the short time factor in performing the operation. No accurate method for the determination of epinephrine in the blood is available. A somatic analgesia to about the fourth dorsal segment must be derived from the use of spinal anesthesia if one hopes to inhibit the splanchnic nerves to the adrenal glands. Procaine hydrochloride was used as a spinal anesthetic, the dose varying from 80 to 120 mg. The head of the table may be tilted downward 10 degrees for a few minutes to assure high enough anesthesia. In so doing the patient's head should be raised on a pillow to prevent the anesthesia from extending to the cervical segments. No pressure drugs have been used to prevent or treat falling pressure. When it fell greatly, the Trendelenburg position and intravenous fluid were used. It is not necessary to use spinal anesthesia for all thyroid patients.

Malignant Goiter.—Ward stresses the importance of knowing which types of goiter are likely to become malignant and which signs should arouse suspicion of malignant change. Cancer is almost unknown in exophthalmic goiter. In the author's series of 5,439 thyroidectomies there were 168 cases of cancer. Only 1 of these occurred in the exophthalmic type. Almost all malignant goiters are nodular. The incidence of malignant goiter is influenced by the degree of endemicity and the frequency of nodular goiter in a given geographic locality. The preponderance of malignant goiter is in favor of women; but the expectancy for carcinoma in men with nodular goiter is much greater, 1 in 9 men coming to surgery. Of the three cardinal signs of malignant goiter—hoarseness, fixation and hardness—at least the first two denote a far advanced lesion. Any or all of these signs can be produced by benign growths. Carcinomatous and calcareous degeneration may occur in the same nodule, and delay in removing it alters the prognosis unfavorably. Long standing or slowly growing tumors which suddenly undergo rapid growth and produce pressure symptoms are suggestive and should be extirpated before the clinical picture of malignancy develops. The author has found it practical from a prognostic and therapeutic point of view to classify malignant thyroid tumors according to their characteristics of growth and their microscopic architecture. He differentiates three groups: papillary carcinomas, malignant adenomas and all others. Prognosis is based on the time of diagnosis, the pathologic pattern and the presence of metastasis. Deaths are in direct proportion to the ease of diagnosis. Papillary carcinoma offers the best prognosis, and the degree of malignancy can apparently be estimated by the corresponding extent of departure from the papillary pattern. The prognostic evaluation of metastasis is similar to that in carcinoma of other organs, with the exception of rare dormant metastatic lesions in patients seemingly well years after operation and irradiation. Prophylaxis consists in the removal of nodular goiter so early that there is no preoperative suspicion of malignant change. Statistics of 1 carcinoma in 9 men and 1 in 21 women operated on for nodular goiter substantiate the importance of this procedure. Suspected or diagnosed carcinoma calls for radical resection, always preserving at least one recurrent nerve, one parathyroid gland and both carotid arteries. Roentgen therapy can be used alone or in combination with surgery but should never be administered without the benefit of a biopsy report. Results may be expected to be good in the extremely radiosensitive papillary carcinomas, fair in a small number of malignant adenomas and unfavorable in all others. The principal value of x-ray therapy lies in its administration postoperatively.

Tennessee State Medical Assn. Journal, Nashville

37:361-394 (Nov.) 1944

Postwar Readjustments of Returning Medical Officers. V. Johnson. —p. 363.

37:395-426 (Dec.) 1944

Government and Medical Service. G. W. Dyer. —p. 395.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:551-586 (Oct. 28) 1944

- *Need for Asepsis in Local Penicillin Therapy. W. McKissock, V. Logue, and I. Bartholomew.—p. 551.
Some Mistaken Diagnoses in Common Infectious Fevers. D. F. Jolinstone.—p. 555.
Gastrointestinal Bleeding Due to Vitamin K Deficiency Complicating Labor. Eileen Malone.—p. 559.
Spontaneous Rupture of Apparently Normal Spleen. L. E. Jones.—p. 561.
Pneumoperitoneum. D. Leys.—p. 562.

Need for Asepsis in Local Penicillin Therapy.—McKissock and his associates point out that gram negative organisms have been found in the discharge from penicillin treated wounds. Organisms like *Escherichia coli*, *Proteus vulgaris* and *Pseudomonas aeruginosa* have been grown from the aspirate from wounds receiving local injections of penicillin solution. The time at which such gram negative organisms gain entry to the wound is important. The suggestion has been made that they are present in the wound initially but are overgrown by staphylococci and streptococci in first cultures, and only when the latter organisms have been removed or inhibited by penicillin can the gram negative organisms be obtained in culture mediums. The authors are inclined to think that the appearance of these gram negative organisms in a postoperative wound is due to added hospital infection. The opportunity for cross infection of a wound undergoing treatment with penicillin is particularly good. A rubber tube runs from the outside air to the depths of the wound, and through this channel injections of the penicillin solution are made, usually twice daily, for from three to five days. Unless unusual precautions are taken to safeguard this channel against bacterial contamination, it is easy to imagine the common fecal organisms (which are penicillin resistant) being carried into the wound at the time of injection. The authors undertook experiments to see whether these organisms need necessarily appear in penicillin treated wounds or whether they could be excluded by methods designed to close the supposed new port of entry (the penicillin tube) and by the other precautions against hospital infection of wounds. They report observations on two series of battle casualties, each comprising 20 men, in which local penicillin therapy was employed. The incidence of potential cross infection was 3 cases in 20 in the unit's original surroundings, and no clinical cross infection occurred. In the second series, under less perfect conditions, the potential rate rose to 7 cases in 20, and 1 superficial case of clinical hospital infection resulted. Cross infection of wounds by way of the penicillin tube is an obvious possibility and, as it has not appeared in the present series (the 1 case described being only a superficial cutaneous infection), it is suggested that the aseptic screw cap in use is the responsible factor in prevention. The need for proper closure of the scalp wound and very early skin healing is emphasized in view of the total average hospital (or cross) infection rate of 25 per cent.

Edinburgh Medical Journal

51:353-400 (Sept.) 1944

- Chemistry of Cell Nuclei. E. Stedman.—p. 353.
Rehabilitation in Army. J. J. R. Duthie.—p. 367.
Vitamin P: Observations on Capillary Resistance in 2 Cases of Scurvy. H. Scarborough.—p. 381.
Propylene Glycol Vapor as an Air Disinfectant: II. J. P. Duguid and S. W. Challinor.—p. 388.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

51:377-488 (Oct.) 1944

- Intraepidermal Carcinoma (Bowen's Disease) of Vulva: 2 Cases. T. N. A. Jeffcoat and T. B. Davie.—p. 377.
Control of Staphylococcus Aureus Infections in Maternity Department. F. A. Knott and J. B. Blaikley.—p. 386.
Treatment of Amenorrhea with Combined Anterior Pituitary Follicle Stimulating Hormone and Chorionic Gonadotropin. A. Davis.—p. 401.
Premature Birth (Analysis of 1,000 Cases): Incidence, Etiology and Immediate Result to Baby. S. C. Sandifer.—p. 408.
Some Curiosities of Mammalian Reproduction: Part I. Mammals That Have Triumphed Over Anatomic Handicaps. F. W. Jones.—p. 416.
Etiology of Toxemias of Late Pregnancy. F. J. Browne.—p. 438.

Medical Journal of Australia, Sydney

2:349-372 (Sept. 30) 1944

- Sporadic Meningococcemia Among Royal Australian Naval Personnel.—J. K. Maddox.—p. 349.
*Liver Necrosis in Burns Treated with Tannic Acid. A. V. Jackson.—p. 352.
Papuan Interlude. C. H. Lawes and B. T. Keon-Cohen.—p. 354.
Length of Small Intestine. J. B. Cleland.—p. 359.

Liver Necrosis in Burns Treated with Tannic Acid.—Jackson described the results of postmortem examinations on 8 soldiers who died from burns at an Australian general hospital in New Guinea. All burns were first degree flash burns. The cases were comparable, except for the local treatment of the burns; some patients were treated with tannic acid and some were not. Only slight liver damage was observed in the 4 patients who had no coagulant applied to their burns. Similar slight damage was seen in 1 patient whose burns were treated with silver nitrate. One patient had tannic acid alone applied to his burns; in his liver cloudy swelling was the only abnormality found, and he died from a secondary pulmonary infection. Two patients were treated with a mixture of 10 per cent tannic acid solution and 10 per cent silver nitrate solution; at necropsy pronounced hepatic necrosis was found in both. The difference between these 2 livers and the other 6 was striking. From the evidence the author considers it justified in blaming the silver nitrate and the tannic acid for the hepatic necrosis.

Archives de l'Institut Pasteur d'Algérie

22:1-100 (March) 1944. Partial Index

- Contribution to Study of Vital Stains in Bacteriology. P. Remlinger.—p. 1.
*Utilization of Goat for Preparation of Nonliving Vaccine Against Exanthematous Typhus with Virus Derived from Induced Rickettsial Pneumonia. E. Sergeant and R. Horrenberger.—p. 8.
Encystment of Dysenteric Ameba. R. Martin and M. Behey.—p. 11.
New Case of Chromoblastomycosis Observed in Algeria. J. Montpeller and A. Catanei.—p. 13.
Antiscorpionic Serotherapy. E. Sergeant.—p. 18.
Notes on Species of Phlebotomus. L. Parrot and R. Gougis.—p. 40.

Goat for Preparation of Vaccine Against Typhus.—Sergeant and Horrenberger point out that search for an abundant source of rickettsias is at the base of the technics of preparation of various nonliving antityphus vaccines. The utilization of rickettsias derived from the lungs of inoculated animals constituted a great advance. In April 1942 at the Pasteur Institute of Algeria the use of goats or sheep was envisaged for the preparation of antityphus vaccine. First, sheep were utilized and it was found that this readily available and easily manageable animal permitted the preparation of large quantities of vaccine. The lungs of goats inoculated with rickettsias constituted an even more advantageous source of virus than did the lungs of sheep: the yield of rickettsias was as great as that of the lungs of mice and it was possible to infect the goat from the mouse. The author mentions measures that have been taken to reduce the frequency and gravity of typhus infections among the laboratory personnel. As a result of these measures, during the last two years only 3 out of 30 persons have contracted a mild form of typhus.

Pediatria Prática, São Paulo

15:143-194 (July-Aug.) 1944. Partial Index

- *Alcoholic Intoxication of Newborn Infants: Case. O. Gonzaga.—p. 163.
Alcoholic Intoxication of Newborn Infant.—Gonzaga advises against the use of alcohol on the breasts of nursing mothers as a disinfectant. He reports the case of a normal infant who developed exaggerated somnolence on the ninth day of his existence. Put to the breast, he sucked with avidity, after which he sank into deep sleep. On the following days he had profuse vomiting. On the thirteenth day he developed torpor, cried and belched. The mother had mumps on the ninth day after parturition. Breast prophylaxis was made with alcohol. The infant's symptoms rapidly improved on discontinuation of alcohol applications to the nipples. The possibility of a nervous manifestation of mumps in the infant was not considered because of the rapidity with which the discontinuation of the use of alcohol by the mother changed the clinical symptom.

Book Notices

Surgical Disorders of the Chest: Diagnosis and Treatment. By J. E. Donaldson, B.S., M.D., F.A.C.S., Major, Medical Corps, Army of the United States. Cloth. Price, \$6.50. Pp. 364, with 127 illustrations. Philadelphia: Lea & Febiger, 1944.

This book is written primarily to acquaint the general practitioner and surgeon with the many changes which in recent years have occurred in the diagnosis and treatment of thoracic disease; changes which have been so rapid that textbooks of a few years ago are now obsolete and so extensive and technical that thoracic surgery as a specialty has acquired great prominence. The author, however, believes that many of the disorders of the chest may safely remain in the hands of the well informed practitioner and general surgeon, while the highly technical operations on the lungs, thoracic wall, heart and other parts require special training and experience. The abnormalities of the thoracic cage and open and closed wounds, including those of war, are considered, with discussion of vital capacity, mediastinal flutter, paradoxical respiration and blast injury. Besides a description of the various diseases of the pleurae, lungs, heart, esophagus and great vessels, the disorders of the mediastinum, diaphragmatic hernia, subphrenic abscess and even the scalenus anticus syndrome are discussed. The technic of delineating the bronchial tree, of the various forms of collapse therapy and of pneumotomy, lobectomy and pneumonectomy are given, with proper indication, in considerable detail.

A terminal section deals with artificial respiration, resuscitation inhalation therapy, anesthesia and physiologic connotations. The author evidently uses pressure anesthesia by mask rather than intratracheal tube. In the statement that "respiratory" arrest for four or five minutes is fatal, "cardiac" arrest may have been intended. Recovery after cessation of circulation in the brain up to seven minutes has been known to occur.

In general the author has given a rather concise but comprehensive and up to date description of the disorders of the chest. Where two different methods of treatment are in use they are described without partiality. The reader is advised as to procedures now discarded or rarely used. At the end of each chapter there is a useful bibliography carried well into 1944. This is the best handbook on thoracic surgery yet published.

The Urinary Tract: A Handbook of Roentgen Diagnosis. By H. Dabney Kerr, M.D., Professor of Radiology, State University of Iowa College of Medicine, Iowa City, and Carl L. Gillies, M.D., Associate Professor of Radiology, State University of Iowa College of Medicine. Cloth. Price, \$5.50. Pp. 320, with illustrations. Chicago: Year Book Publishers, Inc., 1944.

As might be expected from the roentgenologists associated with the urologic clinic at the State University of Iowa Hospitals, the authors have given a splendid exposition of the roentgen diagnosis of the urinary tract in this handbook. The book has an attractive format. It is clearly illustrated, a circumstance which is probably due in no small part to the fact that the authors did the photographic work themselves and were thus able to bring out distinctly the film features which they wished to show. The size of the structures pictured has been kept to a uniform proportion of that of the shadow on the original film throughout so that, in studying them, no allowance need be made for varying sizes in different cuts. All of them (some 475 are given on 306 pages) are quite typical, so that a reasonably well versed urologist was able in most instances to pick up readily the diagnosis from the illustration without referring to the legend; the process in reverse, studying the subject without previous knowledge of it, should be correspondingly easy. The arrangement of putting the illustrations on the right hand page and the legends on the opposite left one facilitates study. The text has been kept to a minimum, reliance being placed on comprehensive legends, which include ample clinical data, and clear illustrations for description and explanation. The sections on the kidneys, ureters and bladder follow conventional lines and are complete. The various types of back flow in the kidney and the diagnostic pitfalls that spring from them are well treated. Similar artefacts arising from too energetic efforts to obtain a ureterogram through a catheter placed against an impacted stone in the ureter are not shown.

A fair criticism of the book is that renal injuries from physical violence have not been dealt with extensively. At present such lesions are common and their study by pyelogram gives important indications for treatment. Likewise, borderline cases that plague both the urologist and the roentgenologist have been omitted. The seventy-four pages, almost one fourth of the book, devoted to the roentgenology of the urethra will be a revelation to those who have not already given attention to the x-ray study of this part. Lesions already known from other angles, the urethroscope, operation and necropsy will be viewed from a new aspect and a wider understanding of their pathologic implications found. This is especially true of study of the prostatic urethra. If this method is applied, lesions that are perhaps not even suspected from the history and clinical examination may be disclosed and indications as to adequate treatment obtained.

Perhaps the most significant sentence of the book is found in the second paragraph of the preface: "We wish to emphasize, therefore, that in determining the status of the urinary tract it is necessary to correlate all clinical and laboratory data with the roentgen data before arriving at a final diagnosis." While this is trite, its substance is all too frequently forgotten by many physicians, and the roentgenologist is often asked to reach a conclusion that can be attained only by collaboration with the urologist. This feature becomes only too evident when a urologist who has been used to such cooperation is asked to work in a situation where the roentgenologic assistance is given grudgingly or stingily or where cooperation is absent altogether. This generally comes from a lack of appreciation of the pathologic and diagnostic problems involved or of ignorance of the limitations of each method of examination. The roentgenologist must know a great deal of urologic pathology and methods in order to help the urologist efficiently.

The book is recommended for all whose interest in roentgenologic urology is more than casual, and it should be in the hands of every teacher and student who is really interested in either branch.

Trichinosis. By Sylvester E. Gould, M.D., D.Sc., Pathologist and Director of Laboratories, Eloise Hospital, Eloise, Michigan. Cloth. Price, \$5. Pp. 356, with 128 illustrations. Springfield, Illinois: Charles C Thomas, 1945.

The author in thirteen chapters has completed a book on a disease which is of paramount importance to the public health in this and other countries. The book is generously and well illustrated and has important and complete data on the epidemiology, immunology, diagnosis, treatment, prognosis and control of trichinosis. Therefore it should prove essential to the libraries of health departments, hospitals, the thoughtful and careful clinician and all purveyors of foods, especially pork products. Gould clearly demonstrates that the main sources of this disease are the communities offering unsafe foodstuffs for feeding pigs and failure to provide proper regulations to make pork and its products safe. The hog industry must from this book become conscious that the production of pork food products is not a private enterprise but carries many obligations within the industry in the interest of the public health. Pork, after all, is an excellent food, and the use of trichinella free meat, at least in sausage, appears necessary and fundamental. This book is a logical, concise, comprehensive and thorough approach to all the characteristics of trichinosis as a disease and public health problem. Its timely publication is certain to prove of value to many workers.

Manual of Urology. By R. M. LeComte, M.D., F.A.C.S., Professor of Urology, Georgetown University, Washington, D. C. Third edition. Fabrikoid. Price, \$4. Pp. 305, with 60 illustrations. Baltimore: William Wood & Company, 1944.

This is a small handbook of eleven chapters, the first three of which discuss the various methods of examination in urology, the symptoms observed in urologic diseases and methods of treatment. The remaining eight chapters discuss briefly the various diseases of genitourinary organs. In this edition is a new section on pain. Recent developments of chemotherapy in the treatment of genitourinary infections and new methods in the treatment of advanced prostatic cancer are included. This book, because of its conciseness, will no doubt continue to be popular with medical students.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TREATMENT METHODS FOR ALCOHOLISM

To the Editor:—I have a patient addicted to alcohol who has, as long as he is sober, the best intentions to abstain from alcohol. As in most such cases, he is unable to do so. Have any promising treatments been developed? I have read about a psychoanalytic treatment that takes about eight days but cannot recall any details. Expense would be no object in this instance.

M.D., Alabama.

ANSWER.—As yet no specific treatment of alcohol addiction has been found. The question as to which of the existing technics should be utilized must depend on a thorough psychiatric study and a complete physical examination of the patient. Gastric and circulatory disturbances and deficiency diseases often attendant on alcoholism should be taken care of as a first consideration.

1. The conditioned reflex treatment has received much attention in the past few years. This technic is a scientific refinement of the old "aversion" treatments. Emetine is being used in preference to apomorphine as the conditioning drug. The treatment requires eight to ten days' hospitalization and reinforcement treatments approximately every three months in the first year. This method has been widely tested and reported on (Lemere, F.; Voegtlin, W. L.; Broz, W. R.; O'Hollaren, P., and Tupper, N. E.: *THE JOURNAL*, Sept. 26, 1942, p. 269. Thimann, J.: *New England J. Med.* 228:333 [March 18] 1943. Kant, F.: *Quart. J. Stud. on Alcohol* 5:229 [Sept.] 1944). The conditioned reflex treatment requires less time than most of the other treatment methods, but according to physicians with experience in this technic it is successful only in the absence of any definite psychopathy.

2. A more recent technic uses hypnosis instead of drugs for establishing the conditioned reflex (Kroger, W. S.: *THE JOURNAL*, Oct. 31, 1942, p. 714). Hypnoanalysis of brief duration is carried out in conjunction with this treatment. Evidently the reference in the query to "psychoanalytic treatment that will take eight days" refers to this technic. This new method has not been tested widely as yet.

3. Electric shock, much used in the therapy of psychoses, has been applied also to the treatment of addiction to alcohol. Success has been reported in the treatment of delirium tremens (Berkwitz, N. J.: *Am. J. Psychiat.* 99:364 [Nov.] 1942), but failure has been reported in alcoholism without psychosis (Neymann, C. A.; Urse, V. G.; Madden, J. J., and Countryman, M. A.: *J. Nerv. & Ment. Dis.* 98:618 [Dec.] 1943). An evaluation cannot be made at this time.

4. The activities of Alcoholics Anonymous, an informal organization of ex-alcoholic addicts, are being observed with interest in the psychiatric literature. They are described in *Alcoholics Anonymous*, published by the Works Publishing Company, New York, 1944. Local organizations in the larger cities of the United States aggregate a membership of approximately 15,000 ex-alcoholic addicts. Psychiatric studies of this group have been made. (Tiebout, H. M.: *Am. J. Psychiat.* 100:468 [Jan.] 1944. McMahan, H. G.: *Illinois Psychiat. J.* 2:15, 1942. Corwin, E. H. L., and Cunningham, E. V.: *Quart. J. Stud. on Alcohol* 5:9 [March] 1944). The usefulness of the social therapy of Alcoholics Anonymous is generally recognized, but there are differences of opinion concerning its limitations.

5. Psychotherapy in one form or another is still the most frequently applied treatment of addiction to alcohol and formally or informally enters into all of the treatments mentioned. At the same time some adjuvant medical treatment is used by nearly all psychotherapists.

DISTANCE OF PROJECTILE VOMITING

To the Editor:—What distance in feet can a patient vomit in projectile vomiting? Are there any records of a patient vomiting 20 feet or more in this condition?

Major, M. C., A. U. S.

ANSWER.—As far as can be learned, this is one event for which national or international records have not been kept. The championship has yet to be determined. Perhaps 20 feet is a little far unless somebody was trying for a record. More than 20 feet down has been observed many times; 20 feet upward or horizontally is another matter!

TYPHOID CARRIERS

To the Editor:—I should like information on the treatment of a white woman, aged 52, who is a confirmed typhoid carrier, apparently healthy except for a psychosis which necessitated her recent commitment to a mental institution. Is the removal of the gallbladder indicated as an accepted procedure? If so, what is the percentage of recoveries, and how long after the operation can the culture be expected to become negative? Are sulfonamides indicated, and how effective are they? Is complete isolation from other patients in the wards or in the day room necessary?

M.D., Michigan.

ANSWER.—Removal of the gallbladder is not an accepted procedure to rid carriers of typhoid bacilli. Such an operation would, no doubt, be successful if the gallbladder were the only place where bacilli propagate, but the probabilities are that they also reside in the liver, in the lymphoid tissues of the intestine and elsewhere. Reports of success have been published after cholecystectomy, but adequate follow-up cultures of feces and urine have seldom been made. Bacilli are often shed in "showers," with perhaps long periods in which the stools or urine are free of them, so that cultures to determine their presence or absence must be made repeatedly over long periods. To answer the second question, if the gallbladder were the only source, and if it was removed, typhoid bacilli should disappear promptly. The sulfonamide compounds are without value in this field, and penicillin will be likely to fail also. Reports are not available on the value of other antibiotics which affect gram negative bacilli. If the patient's psychosis is such that she will not cooperate in the proper disposal of her feces and urine and in other hygienic measures, complete isolation is necessary. With cooperation and obedience, however, the danger of transmitting bacilli to others is minimal, and isolation is unnecessary. The patient should not be permitted to handle food or drink for others.

PAINS IN ARMS DURING LATE PREGNANCY

To the Editor:—During the past several years I have seen maternity patients in the later months of pregnancy who complain of pains in the arms, hands and fingers, which are particularly noticeable at night and are accompanied by a slight swelling of the hands and fingers. These pains are relieved by massage or by getting up and moving about and are severe enough to keep the patient awake at night. The blood calcium is normal, and there seems to be no evidence of vitamin deficiency, for relief is not obtained by the administration of either. The pains are of such severity that it is necessary to give narcotics occasionally. These patients do not suffer from any evident toxemia.

O. G. Mills, M.B., Oshawa, Ont.

ANSWER.—There has been no adequate explanation for the symptoms and findings which are described in this query. It is possible that the altered fluid balance in pregnancy which results in an increase in all tissue fluids may explain some of the symptoms. A decrease in the intake of electrolytes, particularly salt, may help an occasional patient. Heat in the form of a warm bath may offer temporary relief. A small dose of a barbiturate may help some patients. The administration of vitamins and calcium is of no value.

X-RAYS AND BONE UNION

To the Editor:—Has it ever been demonstrated that frequent x-rays have a tendency to delay union in fractured bones?

M.D., Connecticut.

ANSWER.—In a long experience frequent x-ray exposure, that is, diagnostic exposure, has never been found to cause any delay in the union of fractures. By frequent exposure is meant two or three times a week during the first week, once a week for the next three or four weeks and then occasional films. There is undoubtedly a difference between the effect of the rays on infants and children. During the growing period of bones they are more susceptible to the rays than are the adult bones. On the other hand, large doses of x-rays cause aseptic necrosis; this is not uncommon.

ANTICOAGULANT TO FACILITATE INTRAVENOUS THERAPY

To the Editor:—A correspondent in *Queries and Minor Notes* in *The Journal*, Oct. 21, 1944, inquires whether anticoagulants have been used to prevent clotting when pentathol and other solutions are administered intravenously. For the last year I have added 2.5 per cent sodium citrate solution to 2.5 per cent sodium pentothol solution, using not more than 5 cc. of citrate solution to 50 cc. of pentothol. This has been effective in preventing clots forming in the needle when pentothol is administered intermittently for longer anesthetics. No symptoms have been observed from the citrate. It is understood that this represents my personal opinion and is not to be construed as reflecting the policy of the Medical Department of the Army.

Kenneth C. McCorty, Major, M. C., Louisville, Ky.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 127, No. 8

CHICAGO, ILLINOIS
COPYRIGHT, 1945, BY AMERICAN MEDICAL ASSOCIATION

FEBRUARY 24, 1945

DISABILITY ARISING FROM CLOSED HEAD INJURY

DEREK DENNY-BROWN, M.B.

BOSTON

The relationship between the degree of initial traumatic damage done to the cranium in head injury and the extent of subsequent symptoms directly related to bony injury is usually well defined. For example, the part played by a fracture through the orbit in causing subsequent displacement of the globe of the eye, or by a compound or depressed fracture of the skull in causing a hemiplegia of the opposite side, or jacksonian epilepsy, may be clear. Greater difficulty is encountered in forming an estimate of the degree to which these and less direct physical effects account for disability from a previous head injury. Even more obscure is the relationship of such physical after-effects to more general and less tangible symptoms such as headache and dizziness, intellectual deficit, psychoneurotic states, and changes in character and personality which are frequently associated with disability.

Russell,¹ in an analysis of 200 cases of civilian head injury, indicated the importance of the age over 50 years and of long duration of loss of consciousness after injury in increasing the incidence and duration of disability. In a series of cases of war head injuries Denny-Brown² and Symonds and Russell³ have stressed the influence of prolonged unconsciousness and of the presence of mental symptoms in leading to unfavorable ultimate prognosis. It has been suggested by some⁴ that the after-effects of war head injuries differ from those seen in civilian practice, particularly in the psychiatric aspects of disability. Lewis,⁵ in comparing a series of cases of post-traumatic states with simple anxiety states in soldiers, found no essential psychiatric difference between the two. It has often been assumed that post-traumatic mental symptoms in civilians are solely related

to questions of compensation, but Russell⁶ found nervousness in 34 per cent of 72 civilian cases in which no factor of compensation was involved. Greenwood⁷ recently reported a follow-up of cases of civilian head injury and found headache the most common sequel. Seventy-seven per cent of 81 patients followed from the acute stage onward suffered from neurotic symptoms. In three fourths of these, problems of compensation were prominent. In small groups followed for periods up to five years he found that approximately 50 per cent still suffered from symptoms, most frequently headache, dizziness, nervousness and fatigue. He noted no correlation of length of coma, the presence or absence of fracture or of blood in the spinal fluid with subsequent disability. Schaller⁸ attempted to separate two post-traumatic syndromes, a "post-traumatic psychoneurotic state" and a "post-traumatic concussion state" on a basis of no appreciable period of unconsciousness in the former, associated with hysterical exaggeration in statement and behavior, disinclination to work, headache, and favorable effects of settlement of compensation. The "post-traumatic concussion state" followed prolonged loss of consciousness and exhibited predominantly personality change and mental retardation. I² have taken exception to such a division on the grounds that most cases in general experience fall between these two extremes. Symonds,⁹ on the other hand, has long maintained that patients who have suffered a very severe injury may develop psychoneurotic symptoms, and this is certainly true in war injuries.² Further data on disability from head injury in general, particularly on the interrelation of physical and psychiatric aspects, is therefore desirable.

Much of the difficulty of these questions arises in making an estimate of severity of any given head injury. This is derived from the lack of homogeneity in the pathologic changes underlying the condition. Trauma to the head may lead to concussion, simple or compound fracture, laceration of the meninges or of the cranial nerves, contusion of the brain, epidural or subdural effusions or rupture of venous sinuses. There may be any combination of these. Further, the methods of clinical diagnosis at present available do not offer any clear separation of these clinical entities, particularly when they are mild in degree or when more than one is present. Thus it has been common practice to label a state of brief loss of consciousness following head

This work was done under a contract, recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and the President and Fellows of Harvard College.

From the Neurological Unit, Boston City Hospital, and the Department of Neurology, Harvard Medical School. This report is one aspect of the results of an investigation in which Drs. H. Houston Merritt, Harry L. Kozol, Alexandra Adler, Charles Brenner, Edwin M. Cole and Arnold Friedman took part and, for part of the period, Drs. Jurgen Ruesch and Burness E. Moore.

1. Russell, W. R.: The After-Effects of Head Injury, Edinburgh M. J. 41: 129-141, 1934.

2. Denny-Brown, D.: The Sequelae of War Head Injuries, New England J. Med. 227: 771-780 and 813-821, 1942.

3. Symonds, C. P., and Russell, W. R.: Accidental Head Injuries: Prognosis in Service Patients, Lancet 1: 7-10, 1943.

4. Abbott, W. D.; Due, F. O., and Nosik, W. A.: Subdural Hematoma and Effusion as a Result of Blast Injuries, J. A. M. A. 121: 664-666 (Feb. 27), 739-741 (March 6) 1943.

5. Lewis, A., in Discussion on Differential Diagnosis and Treatment of Postconcussional States, Proc. Roy. Soc. Med. 35: 607-614, 1942.

6. Russell, W. R.: Cerebral Involvement in Head Injury, Brain 55: 549-603, 1932.

7. Greenwood, J.: Follow-Up on Craniocerebral Injuries, South M. J. 33: 1077-1081, 1940.

8. Schaller, W. F.: After-Effects of Head Injury: Study in Differential Diagnosis, J. A. M. A. 113: 1779-1785 (Nov. 11) 1939.

9. Symonds, C. P.: Mental Disorder Following Head Injury, Proc. Roy. Soc. Med. 30: 1081-1094, 1937.

injury without other signs as concussion. If the spinal fluid is blood stained the condition, otherwise similar, is called "cerebral laceration" or, if the cerebrospinal fluid pressure is raised, "cerebral edema" (Munro¹⁰). Yet it is manifestly possible that the loss of consciousness may then be identical with that called concussion. Alternatively, cerebral laceration or contusion can occur without loss of consciousness. Similarly a patient may die from meningitis for which the path of entry of organisms was a fracture not demonstrable clinically. The cerebrospinal fluid pressure may be raised as a result of sinus thrombosis or obstruction by fracture without cerebral edema. The clinical diagnoses in common usage must therefore be regarded as approximations which are in many ways unsatisfactory. These defects are even more clearly evident when it is sought to argue from diagnosis to prognosis.

The "severity" of an injury furthermore may have different connotations. Pilcher and Angelucci¹¹ have recently made a close analysis of the hospital course of 373 cases of civilian head injury and found fever, respiratory abnormality, compound fracture, positive neurologic signs, coma and bloody spinal fluid to be signs of grave immediate prognostic significance. The immediate surgical gravity of head injury, however, may have no relationship to the ultimate severity of disability. In the following analysis an attempt is made to relate all features of the head injury to disability. In order to do this it was necessary to follow a series of cases from admission to the hospital onward and take account of all possible factors in the injury, the personality and the environment.

MATERIAL

Over a period of eighteen months extending from July 1942 to December 1943, 430 cases of head injury admitted to Boston City Hospital were examined by a team of investigators including neurologists, psychiatrists, a psychometrist and a social worker. Data were obtained on admission, in many cases on the accident floor, and at intervals thereafter including attendance at a follow-up clinic established for the purpose. For the purpose of the present report patients under the age of 15 years and over the age of 55 years were omitted in order to exclude the influence of age as far as possible and to concentrate on groups in regular employment. Chronic alcoholic addicts and vagrants and others who could not be followed were also excluded.

A group of 200 cases followed until symptom free and returned to full employment,¹² or until symptoms had persisted at least six months, remained after the aforementioned eliminations. This group was evenly distributed through the age range 15-54 years (table 1) and comprised 125 males and 75 females. Skilled or semiskilled workers made up 48 per cent, domestic occupation 19 per cent, students 10 per cent, civil servants (policemen, firemen and others) 6 per cent, laborers 5 per cent. Four patients were intoxicated on admission. The majority of accidents (45 per cent) were traffic accidents, 12 per cent industrial, 12 per cent fighting or robbery, and the remainder occurred in a variety of ways. In 4 the manner of injury was unknown or complex, in 70 a fall, in 31 a blow, in 46 the patient had

been struck by a vehicle, in 38 he was a passenger in a vehicular accident, in 5 he was struck by a falling object, and only 3 were perforating or crushing injuries. Twenty patients had no period of coma, 92 were comatose or semicomatose for less than ten minutes, 42 for less than thirty minutes, 20 for thirty to sixty minutes, 17 up to six hours, 4 for six to twenty-four hours and 4 for over twenty-four hours. There was no observed disorientation in 18 patients. Disorientation was present for a period less than twelve hours in 155 patients, twelve to twenty-four hours in 4 patients, for one to seven days in 12 patients and over seven days in 11 patients. Minor abrasions or hematoma of the scalp was present in 75, laceration of the scalp in 75 and laceration with compound fracture in 6. Twenty-one patients had facial injuries in addition, 32 injuries to one or more limbs, and 8 multiple injuries. Eighteen patients had clear evidence of fracture of the skull, 16 others had bleeding from the ears or nose.

The type of head injury represented by this material is therefore representative of the admissions to most general hospitals and is predominantly that classed as "closed head injury." Few were very serious injuries, and only 3 of the whole group died during hospitalization, 1 from extensive cerebral laceration with epidural hemorrhage, 1 from laceration alone and 1 from femoral thrombosis and pulmonary embolism.

In the following analysis some terms used require definition. Coma was judged by absence of response on stimulation, the duration of disorientation recorded was that of disorientation in time, though disorientation of place and other evidence of confusion were also usually present. The durations of post-traumatic amnesia and retrograde amnesia were recorded on first or subsequent visits to the clinic at least one month after injury, when their amnesia had reached a stable minimum. Abnormalities in reflex responses in the period immediately following injury includes any sign or group of signs clearly indicating pyramidal tract disorder, whether slight or severe hemiparesis. Under the heading mental symptoms is included any complaint of nervousness, fears, anxiety, preoccupation, depression, pronounced irritability, elation, hypochondriasis or obsessional trends. Headache and dizziness were recorded separately and were not taken into account in the assessment of mental symptoms. The presence or absence of litigation, compensation or other financial, occupational and domestic difficulties was separately recorded without reference to their possible significance.

The length of follow-up was less than four months in 2 and four to six months in 48, but all these were symptom free and returned to full occupation when last seen. In 107 follow-up was for six to nine months, in 18 for nine to twelve months and over one year in 25. Disability still persisted after the last follow-up in 5 cases in which the time elapsed since injury did not allow longer than six months follow-up. In 3 cases the absence of return to work was unsatisfactory for reasons connected with the nature of employment, and in 27 cases return to full employment was impaired by other injuries or diseases unrelated to the head injury. These cases are omitted from the analytical tables relating to occupation.

NATURE OF DISABILITY

The complaints of patients convalescing from head injury are varied. They may be classified into complaints derived directly from observed structural injury

10. Munro, D.: *Craniocerebral Injuries*, New York, Oxford University Press, 1938.

11. Pilcher, C., and Angelucci, R.: *Analysis of 373 Cases of Acute Craniocerebral Injury*, *War Med.* 2: 114-131 (Jan.) 1942.

12. Date of induction into the armed forces where this interrupted follow-up.

(symptoms of direct physical disorder), psychiatric complaints (symptoms of the order of fatigue, nervousness, anxiety, depression), symptoms of change in personality (separately coded only when there was evident aggressiveness or irritability or prolonged elation, without other mental symptoms) and complaints of uncertain or variable derivation (headache, dizziness, vertigo). In the present statistical study it was not desirable to label any group of symptoms with a clinical diagnosis, and in fact the insecurity of pathologic grounds for the commonest combination of symptoms, the "post-traumatic cerebral syndrome," was the chief reason for its prosecution. A total of 110 patients (55 per cent) complained of symptoms in convalescence (after leaving the hospital). The frequency of actual combinations of these symptoms is shown in table 1.

The complaints directly referable to structural physical disorder residual from the head injury and persisting into convalescence involved only 16 patients in the 200 under review. There was anosmia in 1 patient, paralysis of the fourth cranial nerve in 1, of the fifth in 1 (with central sensory disorder of the arm and leg), of the sixth in 1, of the sixth with bilateral seventh in 1, of the seventh alone in 1, of the seventh and eighth in 2, of the fifth, seventh and eighth in 1 and of the eighth in 1. One patient had a cerebral monoplegia. 1 had dysphasia, 1 had dysphasia and 1 convulsion. 3 developed convulsions in convalescence, and 1 of these had anosmia in addition. Seven of these patients had persistent headache in convalescence, 8 had dizziness and 12 had psychiatric symptoms.

Of the 200 patients, 81 suffered from headaches in convalescence, 63 of these for over two months. Sixty-eight patients suffered from dizziness, 46 for over two months. The most common combination was that of headache, mental symptoms and dizziness ("post-traumatic cerebral syndrome," "postconcussion syndrome"), which occurred in 15 per cent of the series of patients with head injury and in 27 per cent of those with post-traumatic symptoms. These three symptoms did not differ in any respect where they occurred alone. Headache and symptoms in the mental sphere were the commonest complaints, but there were 15 patients with mental symptoms but no headache and 28 patients with headache without psychiatric symptoms. The mental symptoms were in the form of anxiety (fears, panics) in 69 per cent of the 70 cases, fatigue, nervousness or depression in 17 per cent, hypochondria or obsessive-compulsive neurosis in 4 per cent and change in personality alone (aggressiveness or euphoria) in 10 per cent. The anxiety symptoms followed all types and severity of injury, but 6 of the 7 cases of personality change were after severe injuries with prolonged disorientation.

This report is not concerned with the mechanism of production of individual symptoms, such as headache, dizziness or mental symptoms, an analysis of which will be presented elsewhere by various members of the group. Our chief concern here is to outline the factors which were associated with disability as a whole.

SEVERITY OF INJURY IN TERMS OF ABSENCE FROM FULL OCCUPATION

In whatever way the severity of head injury may be judged, disability for employment forms a measurable standard which has a value both to the community and

to the individual. The duration of absence from work is affected by a variety of extraneous factors, among which many, such as continuance of compensation and fear of losing employment, act in contrary directions. We have not attempted to estimate such interaction in detail. Of the 200 patients 170 were absent from employment solely by reason of their head injury. Of these 42 returned within one week after injury, 71 others within one month, 23 in the second month, 20 in the third, fourth and fifth months, 9 between six and nine months, and 5 were still not fully employed after the ninth month.

In 34 patients in whom disability persisted beyond two months the nature of the symptoms which determined disability, i. e. which were alone associated with

TABLE 1.—Incidence of Symptoms, and Combinations of Symptoms, in Convalescence

Total of 110 patients with symptoms
2 had personality change only
4 had mental symptoms only
13 had headache only
8 had dizziness only
3 had physical signs only
2 had personality change plus physical signs
1 had personality change plus headache and physical signs
2 had personality change plus headache and dizziness
10 had mental symptoms plus headache
5 had mental symptoms plus dizziness
20 had mental symptoms plus headache and dizziness
3 had mental symptoms plus headache and vertigo
2 had mental symptoms plus headache, dizziness and vertigo
1 had mental symptoms plus headache, physical signs and vertigo
1 had mental symptoms plus headache, dizziness, physical signs and vertigo
4 had mental symptoms plus headache, dizziness and physical signs
2 had mental symptoms plus dizziness and physical signs
1 had mental symptoms plus dizziness and vertigo
14 had headache and dizziness only
1 had headache and vertigo only
1 had physical signs and vertigo only

disability or were blamed by the patient for his disability, were as follows:

In 20 patients anxiety symptoms (in 13 of these associated with minor headache or dizziness).

In 1 patient anxiety symptoms and dizziness.

In 3 patients anxiety symptoms with incapacitating headache and dizziness.

In 1 patient physical symptoms (7th and 8th cranial nerve paralysis).

In 2 patients dizziness alone (1 with 6th nerve palsy).

In 4 patients dizziness and headache (1 with 6th nerve palsy).

In 3 patients personality change (1 with anosmia, 1 with mild transient dysphasia).

The nature of symptoms associated with absence from full occupation lasting beyond the first month is shown in table 2. It will be noted that physical symptoms (hemiparesis, convulsions, diplopia, deafness, facial paralysis) are a relatively small cause of disability, though most are long persistent. In a group of 30 patients headache, dizziness and mental symptoms are correlated together with prolonged disability which was then directly related to these symptoms ("post-traumatic cerebral syndrome"). In many others these symptoms persisted in various combinations though full work was resumed.

RELATIONSHIP BETWEEN VARIOUS FEATURES OF THE INJURY AND DURATION OF DIS- ABILITY IN EMPLOYMENT

A large number of separate factors were separately recorded and analyzed in relation to their statistical relationship with duration of absence from full employ-

TABLE 2.—*Nature of Symptoms Associated with Absence from Occupation*

	Duration of Absence from Full Occupation					
	Within 1 Mo.	Within 1-2 Mos.	Within 2-4 Mos.	4-6 Mos.	6-9 Mos.	Over 9 Mos.
Dizziness and vertigo						
None	86	11	6	1	2	..
Less than 2 mos. . .	10	4	2	1	..	..
2-4 mos.	5	3	1	..	..	..
4-6 mos.	1	..	2	1	..	1
6-9 mos.	5	4	3	1	6 (2)	..
More than 9 mos. . .	6	2	3	..	1	4
Headache						
None	80	8	8	1	2	..
Less than 2 mos. . .	10	3	2	..	..	..
2-4 mos.	4	2	1	..	..	..
4-6 mos.	1	2	1	2	1	..
6-9 mos.	10	3	2	1	5 (2)	1
More than 9 mos. . .	8	5	2	..	1	4
Mental symptoms						
None	96	9	6	..	..	..
Less than 2 mos. . .	1	5	1	..	..	..
2-4 mos.	3	1	1	..	2	..
4-6 mos.	3	..	1	..	2	..
6-9 mos.	5	5	3	1	3 (3)	..
More than 9 mos. . .	5	3	5	2	2	5 (3)
Physical disability						
None	108	21	12	2	6	4
Less than 2 mos. . .	..	..	..	..	..	..
2-4 mos. . . . .	..	1	..	1	..	..
4-6 mos. . . . .	..	..	2	..	..	..
6-9 mos.	1	..	1	..	2 (1)	..
More than 9 mos. . .	1	1	1	1	1	1

Figures in parentheses indicate patients with continuing symptoms when last interviewed. Patients whose absence from occupation was related to factors clearly unrelated to the head injury (other injuries, change of occupation) are excluded.

ment. To simplify comparison the figures are presented in tables 3 and 4 as the proportion of cases returned to full employment within two months of injury, beyond two months of injury and after six months from the time of injury. The last group is included within the second group, for some may prefer the longer period, though the smaller number of cases reduces statistical significance. The factors concerned may be grouped into general factors, for example, age, sex and race, pretraumatic factors of which the only one we are concerned with here is the pretraumatic psychiatric state, factors concerned with the nature and place of the injury, factors apparent in the clinical state immediately following injury and factors operating during convalescence.

General Factors.—Duration of disability advanced steadily but gradually in the age groups examined (table 3). A more rapid increase might be expected in the sixth decade as found in the statistics of Russell.¹ No significant effect of sex was demonstrable. The effect of higher education was of a slight and doubtfully significant increase of duration in high school or college graduates. The influence of occupation is probably related to the question of compensation as well as to age and type of injury, for civil servants (policemen, firemen and others), and laborers were relatively heavily retarded in return to occupation as compared with students or domestic workers.

Pretraumatic Psychiatric Evaluation.—The question of family history and of detailed qualities of the personality in relation to the type of mental reaction will be presented by Drs. Adler and Kozol, who conducted this psychiatric analysis. As far as the present purpose is concerned it may be noted that neurotic or psychopathic pretraumatic personalities were returned to occupation earlier than the average of those judged to be normal (table 3). Family history of psychiatric disorder was also without significance. These were unexpected findings which conflict with data derived by Symonds and Russell² from cases of war head injuries. These authors did not, however, have series of patients without symptoms for comparison. Our finding is a reflection of the very small correlation found between pretraumatic psychiatric abnormality (including minor variants) and post-traumatic mental symptoms. Of 60 patients with such post-traumatic mental symptoms 57 per cent had a positive pretraumatic psychiatric history, whereas of 123 patients who did not develop such symptoms 50 per cent had such a history. When present, however, mental symptoms had a very high correlation with disability (as shown later and in table 5).

The Nature and Place of Injury.—The place of injury was significant only in relation to traffic accidents, from which only 72 per cent of patients returned to occupation within two months, and 13 per cent were still disabled after six months. Recreational and domestic

TABLE 3.—*Relationship Between General Factors and Return to Occupation*

	Number of Cases	Per Cent Return		
		Within 2 Mos.	After 2 Mos.	After 6 Mos.
Age				
15-19	24	91	9	0
20-29	40	90	10	0
30-39	24	82	18	0
40-49	45	67	23	10
50-54	17	64	26	12
Sex				
Males	109	73	21	9
Females	61	82	18	7
Education				
Less than 8 grades . . .	90	80	20	7
8-12 grades	90	80	20	7
High school or college graduate . . .	44	82	18	11
Occupation				
Laborer	10	70	0	20
Skilled or semiskilled . .	78	78	22	0
Domestic	33	85	15	0
Student	19	89	11	5
Civil servant (policeman, fireman) . .	22	68	32	25
Psychiatric evaluation of pretraumatic state				
Normal	78	77	23	11
Neurotic	24	68	32	0
Psychopath	29	90	10	3
Other	31	61	39	7
Psychiatric family history positive	46	67	33	7
Other injury				
Head only	108	85	15	5
Ears, eyes, or face . . .	22	68	32	15
Other parts	41	71	29	15

accidents were not followed by disability lasting over two months. Disability following fighting or robbery was minimal. Industrial and street accidents other than those incurred in traffic closely resembled the average disability. The manner of injury, for example by fall or by blow, proved to be insignificant compared with the pronounced delay if it had been a fall from or impact with a vehicle. This reflects a significant relationship to the question of compensation.

The Clinical State Following Injury.—As Moore and Ruesch¹³ have remarked in a report of an earlier phase of the present study, the most accurate record of the disturbance of consciousness produced by head injury is the duration of disorientation, particularly disorientation in time. We found that the duration of coma was

TABLE 4.—*Relationship Between Clinical Condition and Return to Occupation*

	Number of Cases	Per Cent Return		
		Within 2 Mos.	After 2 Mos.	After 6 Mos.
All cases.....	170	80	20	8.2
Disorientation				
None, or less than 60 minutes.....	100	72	28	7
1-24 hours.....	56	84	16	7
1-7 days.....	6	50	50	33
Over 7 days.....	8	25	75	13
Retrograde amnesia				
None.....	21	90	10	10
Momentary.....	111	82	18	5
Minutes or longer.....	38	69	31	15
Immediate affective state				
Normal.....	114	85	15	5
Apathetic.....	30	67	33	17
Excited or restless.....	10	60	40	10
Emotional.....	16	81	19	13
Skull fracture				
No evidence.....	140	84	16	7
Known fracture.....	30	63	37	13
Compound fracture with scalp laceration.....	4	75	25	25
Scalp injury				
None.....	32	78	22	9
Hematoma or abrasion.....	72	86	14	7
Laceration.....	62	74	26	6
Laceration with compound fracture	4	75	25	25
Neurologic signs				
No abnormal reflexes.....	137	84	16	7
Reflex change.....	32	63	37	13
Cerebrospinal fluid on admission				
Clear, pressure less than 200 mm....	87	83	17	7
Clear, pressure greater than 200 mm.....	26	77	23	0
Blood stained.....	46	67	33	13

only indirectly related to the total disturbance of consciousness and was more difficult to record accurately, for most patients had already commenced to make some response to stimuli when first seen, even in the admitting room. The relationship between duration of coma and duration of disability was, however, in general parallel with that of disorientation, and the scatter for post-traumatic amnesia, as might be expected, was an almost exact replica of that for disorientation. We shall therefore consider first the relationship with disorientation, shown in abridged form in table 4. It will be seen that the proportion returned to work within two months falls steadily in proportion to increased duration of immediate disturbance of consciousness. There is a significant increase in disability if disorientation is prolonged beyond twenty-four hours. The effect of durations of minutes was insignificant.

The state of confusion which precedes recovery of full consciousness may be complicated by restlessness or apathy, or in the absence of confusion emotional outbursts or restlessness may color the immediate mental picture. Any of these affective states was associated with delay in recovery compared with essentially normal balance.

Of the various direct clinical criteria of injury the presence of fracture of the skull was associated with significant delay in recovery. This delay was greater when fracture was observed on x-ray examination (58 per cent beyond two months) than when recognized by bleeding from orifices or at operation only (22 per cent). The influence of hematoma of the scalp or laceration of the scalp proved to be negligible, but laceration of the scalp with compound fracture was in a very small group associated with delay.

The presence of headache, dizziness or vomiting during hospital admission was of negligible significance. The findings in the cerebrospinal fluid (on the first or second day after injury except for 4 cases) showed no influence of increased pressure but nearly doubled the prolongation of disability if the fluid had been blood stained. There was correlation between the presence of blood in the fluid and duration of disorientation.

The presence of extensor plantar responses and increased tendon jerks with or without corresponding asymmetry of the abdominal reflexes was also associated with definite delay. Either generalized or focal activity in the electroencephalogram (table 5) was similarly associated with delay, but only in the few cases of brief focal abnormality was this delay remarkable. The confirmation of presence of subdural or epidural hematoma

TABLE 5.—*Relationship Between Tests and Complications and Return to Occupation*

	Number of Cases	Per Cent Return		
		Within 2 Mos.	After 2 Mos.	After 6 Mos.
Electroencephalogram				
No generalized abnormality.....	67	78	22	13
Transient generalized abnormality present.....	23	61	39	9
No focal abnormality.....	91	73	25	11
Transient focal abnormality present	9	56	44	11
Intellectual performance tests				
Below estimated standard late in hospital.....	18	67	33	6
Below estimated standard at first follow-up.....	7	71	29	0
Late defect of measured compared with estimated intelligence.....	7	71	29	14
Measured intelligence (best attainment)				
Below normal.....	10	80	20	0
Average normal.....	53	74	26	9
Above normal.....	21	90	10	0
Cranial operations.....	7	57	43	29
Complications of convalescence				
None.....	63	91	9	0
Litigation or compensation.....	32	63	37	0
Occupational.....	11	55	45	26
Other financial.....	7	100	0	0
Domestic worry.....	16	100	0	0
Other disease or injury.....	16	63	37	13
More than one.....	11	55	45	26
Symptomatology in convalescence				
Mental symptoms, headache and dizziness.....	27	52	48	29
Mental symptoms with or without other symptoms.....	59	53	47	24
Headache alone or in combination.....	71	68	32	17

was made in very few cases and in them recovery was not delayed.

Tests for intellectual performance from the batteries detailed by Ruesch and Moore¹⁴ and Ruesch¹⁵ from an

13. Moore, B., and Ruesch, J.: Prolonged Disturbances of Consciousness Following Head Injury, *New England J. Med.* 230: 445-452, 1944.

14. Ruesch, J., and Moore, B. E.: Measurement of Intellectual Functions in the Acute Stage of Head Injury, *Arch. Neurol. & Psychiat.* 50: 165-170 (Aug.) 1943.

15. Ruesch, J.: Intellectual Impairment in Head Injuries, *Am. J. Psychiat.* 100: 480-496, 1944.

earlier phase of the present study revealed only a small percentage of patients whose performance late in the hospital course (after recovery of orientation) and at the first follow-up one month after leaving the hospital had not reached a steady level. A similar small group late in convalescence failed to reach their calculated pretraumatic level based on scholastic and occupational attainment. In these groups there was slight delay in resumption of occupation. Close examination of the records of the 7 patients in the last group revealed that all except 2 had suffered trivial injury, and of them 4 had returned to work within two months and only 1 after nine months because of fears and nervousness associated with litigation. Of the 2 others, 1 had been disoriented for five days and had slowness in thinking for some nine months but had returned to full work within two months. This patient was completely recovered in one year. The remaining patient had been disoriented for twenty-four hours and was mentally slowed for ten weeks but then had recovered completely and returned to work. All 7 patients were under the age of 24 years. Persistent intellectual defect residual from prolonged disorientation therefore cannot appear as a factor in disability as a whole and was clearly operative in only 2 patients (1 per cent).

TABLE 6.—*Diagnostic Category in Relation to Employment Disability*

	Number of Cases	Per Cent Return		
		Within 2 Mos.	After 2 Mos.	After 6 Mos.
Dazed or scalp injury only.	12	83	17	17
Concussion.	72	85	15	7
Concussion plus "edema".	13	92	8	0
Laceration.	37	76	24	8
Laceration with paresis or paralysis, cerebral or of cranial nerves.	14	43	57	21
Hematoma, subdural *.	9	33	67	22

* Separate series of hematomas of wider age range from the whole group of 430 cases for comparison.

Factors Operating in Convalescence.—The presence of complications in convalescence, including litigation, compensation or insurance, domestic and family troubles, occupational difficulties, other financial problems, other diseases or injuries or more than one of these was carefully recorded, regardless of the opinion of the significance of each. Questions of compensation, occupational difficulties and the presence of other diseases or injuries (though the head injury was blamed by the patient) emerge as of high significance, as also did combinations of factors (usually involving compensation). Domestic difficulties and financial problems other than compensation proved to be without statistical effect.

The symptoms present in convalescence have been examined in their relation to disability in the preceding section. It may be noted that mental symptoms of any kind had an extremely high correlation with disability. Of patients with such symptoms only 53 per cent were back to full occupation within two months and only 76 per cent within six months. Of patients without such symptoms, 95 per cent returned to occupation within two months and 100 per cent within six months. Headache had less correlation with disability than had mental symptoms (tables 2 and 5).

Relationship Between Initial Surgical Diagnosis and Disability.—It is also of interest to compare the prog-

nosis with regard to employment disability in the various diagnostic categories in closed head injury (Munro¹⁰). If by concussion is understood an immediate disorder of consciousness without change in the spinal fluid or other evidence of structural damage to the brain, by edema is meant the same clinical phenomena but with raised pressure in the cerebrospinal fluid (over 200 mm.), and by cerebral laceration the finding of blood in the spinal fluid with or without loss of consciousness, and without paralysis or change in reflexes; the figures for these conditions as they occurred in the 200 cases are given in table 6. The presence of disorder of consciousness with abnormal neurologic signs—hemiparesis, facial or other weakness or cranial nerve injury—is listed as a further, separate category. A small series of acute subdural hematomas is included for comparison.

Whereas such diagnostic categories had little value in prognosis as between concussion, edema and laceration, the prognostic value of separation of all cases showing abnormal neurologic signs, whether of reflexes, of central paralysis or of cranial nerve palsy, is emphasized. This, however, is only one aspect of the subject, for it will be noted that disability lasting over six months was as common after trivial injuries as of those with neurologic disorder. Only when the environmental factors of the injury are taken into consideration is this discrepancy accounted for.

The Post-Traumatic Cerebral Syndrome.—The 30 patients who suffered from the combination mental symptoms plus headaches plus dizziness were of particular interest in view of the literature that has accumulated around this "postconcussion syndrome." The age and sex distribution did not differ from that of the whole group. All had lost consciousness except 3, but only 13 had disorientation for over one hour, and only 3 for over twelve hours. Laceration of the scalp had occurred in 19, and only 4 had no outward sign of head injury, neurologic signs were positive in only 2, and the spinal fluid was blood stained in only 5 (not examined in 5). Electroencephalographic abnormality occurred in 8 (not examined in 8). In terms of the foregoing classification 20 of these patients had suffered from concussion. In the whole group the headache was decidedly influenced by posture in 8 and by effort in 12. The dizziness was directly influenced by change of position in 21. There was a history of pretraumatic neurosis in 6, of personality disorder in 8. Litigation complicated convalescence in 18, occupational difficulties in 11, and only 2 lacked any complication in this period. There was return to full occupation in less than two months from injury in 14, in more than two months in 13 and only after six months in 7 of these (table 5). In 3 working efficiency was disturbed by other causes.

The "post-traumatic" or "postconcussion" syndrome was therefore commonest following minor injury, and the frequency of scalp injury and of complicating environmental factors in convalescence are notable. Even in the very high correlation of these features the full syndrome only slightly exceeded the correlations of any of the symptoms occurring singly or in other combination with the same factors. In terms of disability from employment the postconcussion syndrome has the same prognosis as have the mental symptoms of which it is partly composed (table 5).

The Outcome of Prolonged Disorientation.—Mental symptoms followed severe injury (disorientation over twenty-four hours) in 15 of 23 patients. In 2 of these

the symptoms were of fatigue and nervousness, in 7 of anxiety and in 6 of personality change alone. Of the latter 3 were delayed beyond two months in return to occupation and in 2 of these cranial nerve paralysis and epilepsy were given as the cause of delay. Anxiety and related states remained highly correlated with disability in the group, all 9 being greatly delayed in return to occupation. The group of severe injuries without mental symptoms all returned to occupation within two months or were delayed by other injuries. The features of severity of injury which indicate a bad prognosis were therefore resolved into great likelihood of cranial nerve injury, epilepsy or associated injury to parts other than the head, and also an increased liability to anxiety symptoms. The proportion of headache and dizziness remained the same. We therefore submit that the term "postconcussion syndrome" be dropped.

SUMMARY

Statistical analysis of the association of various features of the head injury with the resulting absence from employment indicate a constellation of features which correlated with prolonged convalescence. The relative degrees to which prognosis was thus affected may be indicated in the list presented in table 7, in which factors are represented in order of percentage disability.

From our whole analysis it appears possible to reach a generalization that the factors of prognostic ill omen can be arranged in two chief groups, those that are indicative of injury to the brain and those which relate to the environment. In the former, focal neurologic signs, focal or general electroencephalographic change and prolonged disorientation appear to be of primary pathologic significance, and the presence of blood in the spinal fluid and fracture of the skull to be less directly associated. In the environmental group are sources of anxiety derived from the injury, the initial emotional disturbance, the circumstances of employment or place of injury which predicate problems of compensation, and the circumstances and duration of convalescence, which breed anxiety as to personal or family security.

In some hospitals, particularly those serving centers of heavy industry, a greater proportion of compound fractures of the skull might be expected, with corresponding increase in disability. The type of head injury here represented, however, is held to be fairly representative of average accident admissions.

Headache was the most frequent symptom following head injury, and the combination of headache and dizziness undoubtedly causes much distress. These symptoms had, however, a relatively small association with disability from occupation. Without prejudice to their essential nature, their value in causing disability was found in their association with mental symptoms.

The insignificant part played by defect in intellectual function requires special comment. The performance tests used showed well defined defects only in the hospital course with subsequent improvement and were selected from two preliminary batteries devised to emphasize the type of performance defect (Ruesch and Moore¹⁴). In addition a standard intelligence test (Wechsler-Bellevue) was administered by Dr. Cole in follow-up. Defective performance persisting for long periods was demonstrated in some patients (Ruesch¹⁵), particularly following prolonged post-traumatic confusion (Moore and Ruesch¹³). The elimination of patients over 55 years of age and of chronic alcoholic addicts from the present analysis, however, elimi-

nated all such examples of "post-traumatic dementia" (Denny-Brown,¹⁶ Cole¹⁷). Persistent mental slowing was seen in 2 patients with ultimate recovery but did not account for prolonged disability. It is possible that severe cerebral lacerations by penetrating injuries would leave more persistent intellectual impairment, but the best examples in our series, one of whom had extensive laceration of both frontal lobes by a buzz saw, made a remarkable recovery in all performance tests. The conclusion further throws doubt on the ability of trauma alone to induce persistent dementia in a healthy brain.

Head injuries with prolonged disturbance of consciousness, blood in the spinal fluid and positive neurologic signs following the injury led to transitory intellectual slowing, persistent headache and dizziness, disorder of personality, cranial nerve paralysis, epilepsy or combinations of these. All these after-effects account for only a small part of prolonged disability (29 per cent of 34 cases). In the remainder the patient attributed his disability to symptoms clearly referable to an anxiety state (anxiety neurosis) even after the

TABLE 7.—Factors of Bad Prognostic Significance

In Relation to Return	
Within Two Months	Within Six Months
Disorientation over 7 days	Disorientation 1-7 days
Disorientation 1-7 days	Laceration of scalp with compound fracture
Transient abnormality in electroencephalogram	Initial apathy
Initial restlessness or excitement	Age over 40 years
Abnormality in reflexes	Injury to other parts
Other disease or injury complicating convalescence	Disorientation over 7 days
Questions of compensation or litigation	Blood in cerebrospinal fluid in first 2 days
Fracture of the skull	Fracture of skull
Blood in cerebrospinal fluid in first 2 days	Abnormality in reflexes
Initial apathy	Initial emotional disturbance
Defect in intellectual performance late in hospital stay	Other disease or injury complicating convalescence
Age over 40 years	Electroencephalographic abnormality
	Questions of compensation or litigation

most severe injuries. If a judgment were allowable in relation to certain cases of isolated headache or dizziness the proportion would be higher. We therefore find no reason to separate the after-effects of injuries with transient disturbance of consciousness from those of more severe injuries, except that the latter contained a larger proportion of residual physical symptomatology. The predominating association with occupational disability in all types of head injury was anxiety state (anxiety neurosis).

The effect of head injury on the individual involves a complex readjustment in which a large number of different factors are reflected. In the absence of influence of age, which the selection of material in the study has tended to minimize but which began to be apparent as early as the fifth decade, the psychiatric structure existing before the injury was found to have a surprising absence of effect on the end result. The circumstances of the injury, the duration of disturbance of consciousness and the environmental factors in convalescence were the factors of greatest importance. Of the latter occupational difficulties were as important as

16. Denny-Brown, D.: Intellectual Impairment and Head Injury, *A. Research Nerv. & Ment. Dis., Proc.*, to be published.

17. Cole, E. M.: Intellectual Impairment and Head Injury, *A. Research Nerv. & Ment. Dis., Proc.*, to be published.

questions of compensation. Therapeusis directed to lessening post-traumatic disability would appear to have greatest promise in the direction of psychiatric control of the effect of these factors, by which is meant an attempt to minimize their potency in the production of persistent symptoms of anxiety. Finally, this study indicates that the high percentage of anxiety symptoms reported to follow the head injuries of war is not peculiar to that circumstance.

CONCLUSIONS

1. Out of 430 consecutive admissions to the Boston City Hospital immediately following head injury a series of 200 cases, selected only by exclusion of age groups under 15 years and over 55 years, and of vagrants and chronic alcoholic addicts, was followed for intervals of six months or longer. Each patient was examined soon after admission and at regular intervals thereafter by a team consisting of neurologists, psychiatrists, a psychometrist, an electroencephalographer and a social worker.

2. The majority of injuries (53 per cent) were derived from traffic accidents, and relatively few were of great severity, consisting chiefly of "closed head injury" with varying degrees of scalp injury and loss of consciousness. Twenty-seven patients had post-traumatic amnesia lasting over twelve hours, 22 patients over two days, 8 over seven days. Eighteen patients had clear evidence of fracture of the skull.

3. One hundred and ten patients (55 per cent) complained of symptoms in convalescence. The symptoms were related to structural physical disorder in 16 patients, to psychiatric symptoms in 70, to headaches in 81 and to dizziness in 68. These symptoms were frequently associated, but each could occur alone. The association of headache, dizziness and psychiatric symptoms ("postconcussion syndrome") occurred in 30 patients.

4. Absence from full occupation occurred in 30 cases by reason of other injuries or unrelated causes. In the remaining 170 patients, 136 returned to full occupation within two months, 16 in the third and fourth months, 4 in the fifth and sixth, 9 between six and 9 months, and 5 nine months or more after injury. Such disability has variable relationship to the various post-traumatic symptoms. Psychiatric symptoms had the highest correlation with prolonged disability.

5. Factors of bad prognostic significance in relation to return to occupation within two months of the injury, and within six months of the injury, were analyzed. In each case features indicative of severity of injury (prolonged disorientation, abnormal neurologic signs, blood in the spinal fluid, electroencephalographic abnormality) and those indicative of psychologic stress (initial excitement or apathy, occupational worries, anxiety over compensation) were intermingled.

6. The symptoms associated with prolonged disability, whether the injury had been severe or mild, were predominantly mental symptoms related to anxiety. Even after severe injuries cranial nerve paralysis, dizziness and headache, and personality change accounted for a minor part of disability. Intellectual disorder played no significant part.

7. The environmental factors of the injury were in total effect more important in accounting for disability than were the factors indicative of severity of injury, but neither can be neglected in the assessment of prognosis. The extensive association between head injury and psychiatric factors indicates possibilities for lessening disability by psychiatric treatment.

STIFF NECK AND MENINGEAL IRRITATION

JOHN A. TOOMEY, M.D.

CLEVELAND

Stiffness of the neck is often found in clinical practice accompanying meningeal irritation. Yet, paradoxically enough, patients have been erroneously diagnosed as having had meningitis because of its presence. We had to note the conditions where stiff neck was found, for it soon became obvious that not all stiff necks were due to meningeal irritation.

In order to establish a diagnosis when this condition is present, one has to collect the evidence based on inspection, percussion, palpation and rarely auscultation. The factors causing stiffness of the neck originate in nerves, muscles, bones, fascia, ligaments, glands and other structures. The neck is inspected from front, side and back. One notes how the head is held. Is it braced and splinted to avoid pain? Is there pain in certain positions only? Is pain absent? Is the entire head and neck moved in a marionette manner or is the neck stiffened so that forward movement is impossible while lateral movement is still tolerated? The neck should be palpated along the posterior spine for bony landmarks, along the occiput and mastoid portions of the temporal bones, over the paranasal sinuses, at the base of the sternocleidomastoid muscle insertions, along the course of this muscle, and in all the triangles and fossae of the neck. Is any bone more prominent or more tender than usual? Is there a cervical rib or scalenus anticus syndrome? Are there tumors present fixing the surrounding tissue? Is it possible to overcome the stiffness or muscle spasm present by continuous gentle forward pressure? The finger should be inserted into the pharynx and its walls palpated, especially in the lateral direction. Auscultation gives information only occasionally, such as when air is present subcutaneously or a bruit may be heard over the thyroid. The latter are facts of academic interest and of little importance in the present instance.

Any organism can cause meningitis with evidence of meningeal irritation, including a stiff neck. The stiffness is always found present except under three circumstances: (1) when there is extreme toxicity and death occurs a few hours after the infection has started, i. e. with a fulminating infection, (2) sometimes if the patient has been sick a long time and is examined just before death and (3) when the patient is an infant.

The stiffness present in meningitis is against forward motion of the head; lateral movement is usually possible. It is accompanied by other findings—a positive Kernig reaction, perhaps a Brudzinski sign, opisthotonos and pain along the back. The mere presence of stiffness and a positive Kernig reaction indicates a meningeal irritation.

It has become a habit with clinicians to attempt to raise the head forward from the supine position and if there is pain or resistance to conclude that the patient has meningitis. This does not always follow. This resistance to head flexion is sometimes referred to as

From the Department of Pediatrics, Western Reserve University Department of Contagious Diseases, Cleveland City Hospital.
Read before the Section on Miscellaneous Topics, Sessions for the General Practitioner, at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

a Kernig sign. This is incorrect. The examiner must flex the thigh on the abdomen and attempt to straighten out the leg at right angles to the body to demonstrate the original Kernig maneuver. The patient ill with meningitis will not only have resistance when the head is lifted and bent forward but he will also have a positive Kernig reaction (Brudzinski's sign). When the neck of a patient with meningitis is pulled forward, the legs may flex themselves simultaneously. This is similar to the Brudzinski contralateral reaction in the other leg when the Kernig maneuver is done. The important point is that, no matter how stiff the neck, the Kernig sign in the legs must also be positive or the patient does not have meningitis. The one exception is a meningeal irritation, which occasionally accompanies a lower motor neuron disease like poliomyelitis.

The reverse opinion is sometimes held that there can be no meningitis if the neck is not held in a well stiffened position. In the main this is true of those infections of the meninges due to pyogenic organisms. However, the patient may, as stated previously, lose this response just before death if he has overwhelming toxemia or if he is an infant less than a year old. In the latter instance the other signs are sudden onset, high fever, a bulging fontanel and perhaps convulsions.

Stiffness with meningitis persists until the patient is better, usually for two or more weeks or if the disease is fatal until just before death, when all reflexes may disappear. It is important, therefore, to stress the "persistence" of meningeal signs. A patient may have a stiff neck accompanied by meningeal signs and yet not have meningitis. This happens in three conditions, namely pyelitis, infectious diseases of the gastrointestinal tract and pneumonia. If the patient is a female with a spiking type of a temperature curve who has signs of meningitis that do not persist but come and go, the diagnosis is usually pyelitis. One of the stiffest necks I have seen was present in an 11 year old boy with pyelonephrosis.

There may be localized spots of irritation in the neck, Capps points, which when present indicate a diaphragmatic pleurisy. If the patient has referred pain in the so-called deMuzzy's buttons, one an inch out and a half inch up from the umbilicus, one underneath the ninth rib at the juncture of the lateral rectus line, one in the back along the spine in the region of the sixth vertebra, there may be phrenic irritation with an early pneumonia. If in addition to the foregoing the abdomen is splinted and boardlike and associated with pain on pressure over the lower ribs, the diagnosis usually is pleurisy and early pneumonia, and the stiff neck can be ignored.

A stiff neck is frequently found in patients with severe typhoid, fleetingly with paratyphoid A or B infections of the intestine.

Only one type of meningeal irritation gives a bizarre reaction. Here, as the clinical course progresses, the neurologic signs become bizarre in character and actually different on one side as compared to the other, on the same and on different days, with a varying of spasticity and flaccidity. The eyes are out of focus. Such a picture is practically always indicative of a tuberculous meningitis. In this condition all the signs of meningeal irritation may at times be completely absent.

Stiffness is present with acute infections of the central nervous system other than those causing a leukocytic

reaction. It is a common finding with virus infections. In poliomyelitis the stiffness or flexor muscle spasm lasts for a few days only—twenty-one at the most. If the muscles of the leg are not involved, a classic Kernig response can be obtained. If they are paralyzed, the mechanism for its production is lost.

Should the neck be stiff and should there be signs of a lower motor lesion, i. e. decreased or absent reflexes and nuclear paresis or paralysis, the chances are that the patient has a lower motor neuron lesion with meningeal irritation, probably poliomyelitis. On the other hand, if signs of meningeal irritation, including a stiff neck, are present together with signs of an upper motor neuron lesion, i. e., positive Babinski, Oppenheim, Gordon or other reflexes, hyperactive, deep spinal reflexes and spastic muscles, the patient has an upper motor lesion with meningeal irritation.

A stiff neck caused by exposure to wind or cold is seen in the winter time. Movement of the neck becomes very painful.

Sudden changes of temperature, air conditioning and so on have a profound effect on some persons. The neck stiffens and there will be a low grade pain, almost like a dull toothache. The history helps here. The true Kernig sign will be negative. The neck can be moved through all its arcs of motion by constant but gentle pressure—movements not possible for the patient with meningitis. This condition can be relieved by hydrotherapy.

Lymphatic glands may be found in and about the sternocleidomastoid muscle on all sides. A focus of infection in the mouth, tonsils or throat drains to the local lymph glands. These may swell to the point where they irritate the surrounding tissues and cause the production of spastic muscles and a stiff neck. Movement may become so painful that the head will be voluntarily held splinted. The patient moves with robot-like stiffness, and the entire back is used as a pivot when turning. Gentle persistent pressure, even though painful, will allow the operator to move the head in all directions. Finding a focus and localizing the swelling to the lymph glands by palpation rule out meningeal irritation. The convincing evidence is that the neck can be moved forward with persistent pressure.

A common cause of stiff neck is neuritis, often of the occipital nerve. These patients are sometimes diagnosed as having meningitis. When examined, it will be found that, although the neck is mobilized and held stiff, it also can be moved if pressure is applied slowly. The pain is present all the time, whether the neck is moved or not. Heat may relieve the pain. Trigger areas are found in the back of the neck and head, which when pressed cause sharp pain. Often if the pressure is slowly and continuously applied over those points the pain disappears. The pain is constant and may be like that with a unilateral migraine headache. The vessels of the painful side may be dilated during attacks. If these are compressed, the pain may disappear. The lack of fever and the past history of previous attacks help rule out any meningeal irritation.

Occasionally swellings will begin in the floor of the mouth and extend laterally in and along the subcutaneous tissues of the neck, fixing it with boardlike rigidity. Ludwig's angina is easy to differentiate, since there is brawny induration of the anterior portion of the neck and floor of the mouth. "Bull neck," which

fixes the head likewise and occurs in diphtheria, may be preceded by glandular enlargement followed later by a sudden swelling of the subcutaneous tissue. Often, however the swelling may come on suddenly without previous glandular enlargement and the whole area of the head and neck becomes fixed. There should be no difficulty in differentiation here.

A Bezold's abscess may irritate the sternocleidomastoid muscle at its insertion and cause a spasm which fixes the neck. Here the history of an acute otitis media, probably purulent in type, pain over the mastoid and the like should give the clue. Likewise the swellings which fix the position of the head may start about the face in the preauricular lymph glands, in the parotid and in the buccal lymph gland. The location of the swelling is the differential point in the diagnosis.

Osteomyelitis of the skull bone or of the vertebrae causes fixation of the neck. Tuberculosis of the cervical spine is a frequent cause of stiff neck. The head is splinted; the merest movement causes great pain, which is usually localized. The patient holds the head in his hands when turning from side to side, so that there will not be the slightest jar—quite unlike the patient with meningitis, in which lateral movements are not usually accompanied by pain. The history completes the picture. It is much more difficult to differentiate meningitis from tuberculosis of the lumbar vertebrae; in fact, toward the end of the clinical course, even in tuberculosis of the lumbar area, there may also be an associated meningitis. Where there is no associated meningitis, splinting will be found in all the muscles of the lumbar area and not in the neck region.

A few patients with dislocation of the cervical bones have been admitted to our service diagnosed as having meningitis. The position of the patient and the fact that there is no true Kernig sign should put the physician on guard. One can easily palpate the dislocation through the pharyngeal wall, and the x-ray examination will confirm the diagnosis.

Patients with retropharyngeal abscesses may be diagnosed as having meningitis because of the peculiar posterior bowed position of the neck. If one watches such an individual, two things are observed as peculiar and hence typical: the type of breathing and the position of the patient. The child's inspiration and expiration are harsh and rasping, but cyanosis, anoxemia and air hunger are not present, provided he is inactive and does not have to breathe too fast. The child always assumes the "bronchoscopic" position, i. e. head forward and tilted back, the chin up, the rest of the body bowed back. He lies on his side, never on the back. The palpating finger makes the diagnosis definite. X-ray examination confirms it. Most of these abscesses are lateral to the midline and cannot be seen on inspection.

Children and adults often sleep in cramped positions and awaken in the morning with stiff necks. There is no fever. There is only pain on movement and, paradoxically, in the average patient the more movement is employed the less the pain seems to become until finally the muscles may be worked loose entirely. In any event the neck can be moved about.

A patient with congenital wry neck (*torticollis*) presents no diagnostic difficulties. The scar tissue present may cause fixation of the neck by its contraction. Unilateral spasmodic wry neck is easily recognized, since the head is pulled and held to one side with intense

pain. The child with a bilateral spasmodic wry neck may confuse one for the moment, but palpation and history will soon rule out meningitis.

Older persons with arthritis are occasionally admitted as having meningitis. Most of us have some arthritis after a certain age, an arthritis which may progress to the point of ankylosis without pain, although with limitation of movements and then out of a clear sky pain and muscle spasm will occur. Here the history helps. In the deforming type of reaction, spondylitis deformans, the poker back and the ankylosed vertebrae are obvious. They are easily palpated, and the contour of the spine is revealing.

Injury, twists of ligaments and fractured vertebral processes or body sometimes cause stiffness. A sudden jerk of the head or twist of the body may pull a ligament away from the ends of a transverse process. Such a patient often complains of more pain than does one with a more serious impacted vertebral fracture. A few such persons have been admitted because of stiff neck and back, but the lack of any neurologic findings and any signs of a febrile reaction has prevented us from laying too much stress on the stiff neck present.

Tetanus as well as rabies may cause a stiff neck during the course of spasms. In tetanus or any other condition treated intraspinally with horse serum, a sterile meningitis may develop with a stiff neck which will not disappear for a few weeks.

All of the types of encephalitides may cause a stiff neck. If a meningeal reaction is present there is usually a pronounced increase in the amount of albumin present in the spinal fluid and in the number of cell forms. If the cellular reaction is slight and the albumin present scant in amount, there is little meningeal irritation and but little stiffness of the neck.

In the usual type of sleeping sickness with but few cells present in the spinal fluid, the stiffness of the neck may be only occasionally present. However, it is often seen with other forms of encephalitis, such as the Japanese type B, St. Louis, lymphocytic choriomeningitis and equine encephalomyelitis.

The apoplectic individual with massive hemorrhage is usually in shock and exhibits no stiffness until perhaps a week or two has passed and sometimes not even then. The individual with a slow meningeal bleeder, one with a ruptured berry aneurysm or a ruptured basilar vessel, if not killed by the condition within a short time after the break occurs, may have nothing besides headache and an extremely stiff neck. The stiffness becomes more pronounced if bleeding persists. Other signs help differentiate, such as signs of increased intracerebral pressure and gradual onset of unconsciousness. The lumbar puncture helps to make the diagnosis definite.

Other conditions have at times produced a reaction in the neck, including brain tumors with increased intracranial pressure, fractures of the skull with extravasation of blood, pachymeningitis, mastoiditis, zygomatic mastoiditis, ethmoiditis, lead poisoning, uremia and toxic neuronitis.

Enough has been said to indicate that a stiff neck may not always mean that the meninges are irritated; nor does the absence of a stiff neck always rule out a meningitis. It is a sign which, if present without other signs of meningeal irritation, may usually be ignored.

3395 Scranton Road.

ABSTRACT OF DISCUSSION

DR. GILBERT J. LEVY, Memphis, Tenn.: One of the most frequent and common causes of stiff neck seen in children by both general practitioners and pediatricians is acute lymphadenitis of the neck. This focus of infection may originate in the sinuses, mouth, tonsils or throat. In this clinical condition the painful neck movements and voluntary head splinting are characteristic. Dr. Toomey has described how these glands swell and irritate the surrounding tissues with the resultant spasticity and stiffness of the muscles. Not infrequently you will be rewarded by finding on deep palpation that these glands have extended as far down as the clavicle on one or both sides of the neck. The symptoms of stiff neck in infants at times present a most baffling problem. Nuchal rigidity may or may not be present. The young infant lies motionless and has a shrill cry. Attempted flexion of the neck offers little information. Frequently acute gastrointestinal infections, pyelitis, pneumonia and occasionally malaria may be the answer. One manifestation of stiff neck and meningeal irritation, which is on the increase, certainly in our section of the country, is lymphocytic choriomeningitis. One striking feature of this clinical condition is the pronounced rigidity of the neck, though most of these patients do not appear unusually ill. Tetanus, a decreasing disease, illustrates clinically stiff neck more than any other disease. I believe that most physicians will agree that in tetanus the head is "heavier," because of the increased muscle spasm, than in any other clinical entity. Rabies likewise may or may not produce stiffness of the neck. At the isolation hospital we have encountered 3 cases of pseudotuberculosis, or hysteria, which were admitted as cases of hydrophobia. Two gave a history of dog bite and 1 of cat bite. A quick and ready appraisal to the diagnosis which has never been found wanting is to stand quietly behind the patient at the head of the bed and exert sudden but firm pressure under both supraorbital ridges. The results are understandable.

DR. ARCHIBALD L. HOYNE, Chicago: The significance of stiff neck may be trivial or it may be of the utmost importance. Not every patient with a stiff neck has meningitis, nor does every meningitis patient have a stiff neck. We have had fatal cases of whooping cough where autopsies disclosed that infants died of extensive pneumococcal meningitis, a condition not considered during the life of the patients. An acute infection may cause stiffness of the neck. Prior to the days when typhoid was a rarity in Chicago it was frequently confused with meningitis. In the present season, with the likelihood of poliomyelitis appearing, probably every child with a stiff neck will be suspected of having either poliomyelitis or meningitis. While there is nearly always stiffness of the neck in poliomyelitis, usually the patient also has at the same time a head drop which is not commonly seen with meningitis. It was gratifying to hear Dr. Toomey state that intraspinal treatment causes stiffness of the neck. Some years before the introduction of the sulfonamide drugs, we abandoned all intrathecal therapy. Nevertheless most of us can look back and recall that a good many patients recovered, in spite of the old methods of treatment. One of the questions to decide is whether stiffness of the neck is voluntary or not. Patients who are sent to our contagious disease hospitals in Chicago with a diagnosis of meningitis always receive a lumbar puncture, even though we may believe that meningitis is not present. Therefore patients who are thought not to have meningitis are more certain to have a spinal tap than patients for whom we think the diagnosis is assured. If the diagnosis is verified either by a blood culture or possibly by a smear from petechiae in the skin, usually a lumbar puncture is necessary. The paper of Dr. Toomey's is of immense importance. He has covered far more completely than most people could all of the various circumstances which may contribute to a stiff neck. Outside of a hospital few physicians would be likely to witness all of the conditions which Dr. Toomey has referred to and described so clearly.

DR. JOHN A. TOOMEY, Cleveland: When Dr. Hoyne mentioned the war I thought he was about to call my attention to the fact that concussion can cause stiff neck. He referred to whooping cough. This reminded me that I had forgotten

to mention whooping cough encephalitis, although it could be inferred, since I stated that any acute infection may be the cause of a stiff neck. A spastic hemiplegic condition may develop during the course of whooping cough, a condition from which recovery usually occurs. If it does not there is flexion contraction of the fingers with an atrophy of the face on the ipsilateral side. Dr. Hoyne stated that intraspinal injections could cause a stiff neck. Penicillin should be mentioned in this connection. One wonders why in the treatment of meningitis (epidemic) patients should be subjected to daily injections of penicillin for two or three weeks when they can be benefited and almost cured within forty-eight hours by the use of meningococcus antitoxin and sulfonamide drugs. Sometimes a most severe stiff neck will accompany early rheumatic fever.

OVERTREATMENT DERMATITIS

L. EDWARD GAUL, M.D.

DUBUQUE, IOWA

Almost every day skin lesions are observed that have been made worse by imprudent topical therapy. Even neoplasms are not spared from the "put something on it" impulse. A similar situation must exist on the West Coast, because at a forum on Overtreatment in Dermatology Miller¹ stated that "a comparatively large number of patients in routine dermatologic practice are forced to seek treatment because of irritation from remedies applied and not due to their primary complaints." Apparently all that the skin has to do is to complain a little—an evanescent erythema or pruritus—and it is impulsively daubed with the nearest thing at hand. This practice often causes needless complications, loss of gainful work, unnecessary expense and hospitalization, even the acquiring of cutaneous sensitization.

PLAN OF STUDY

While the routine dermatologic history was being taken the previous treatment was recorded in sequence. A duplicate list of these preparations was given the patient. This procedure made the collection of remedies used as complete as possible. During the interim and depending on the indications, saline compresses were advised or a colloidal clay lotion or paste. Usually the patients returned the same or the following day with the remedies. Patch tests were performed with these as well as with other suspected contactants and read in forty-eight hours.

Three criteria were set up to guide this study:

1. The patch test had to reproduce in miniature some of the characteristics of the presenting dermatitis.
2. The patch test reaction had to persist at least four days.
3. When the irritant present in a remedy was removed, the superimposed dermatitis had to involute in a reasonable time, about three weeks. When these criteria were satisfied it was concluded that the initial skin lesion had been complicated, made worse, by remedies applied.

REPORT OF CASES

The following reports were selected from the series² observed to illustrate the most common classes of skin lesions the recipients of overtreatment. The success

1. Miller, H. E.; Ayres, S. Jr., and Alderson, H. E.: Overtreatment in Dermatology, California & West. Med. 51: 251-253, 1939.
2. Organic mercury compounds have led all the other cutaneous drugs in producing positive patch tests. It would seem appropriate that tinctures, salves and lotions containing a mercury compound should bear a warning on the label of the presence of a sensitizer.

achieved by "taking something off" stands out in sharp contrast to the complications produced by the common tendency of always "putting something on."

CLASS 1.—Physical agents causing superficial injury—actinic, thermal or traumatic:

CASE 1.—S. M., a white woman aged 20, a student nurse, was referred for a dermatitis of the left hand.

History.—Three weeks previously the dorsum of the hand was burned from spattering bacon grease. Several pea size blebs appeared, which were opened and painted with the tincture of an organic mercurial. The following day the lesions were swollen and inflamed. During the ensuing three weeks petrolatum gauze, sulfanilamide and sulfathiazole powders and ointments, boric acid ointment, a burn ointment and calamine lotion were applied.

Examination.—The dorsal area of the left hand was occupied by a tense bullous lesion. The central portion was hemorrhagic.

Course.—Saline compresses were applied with instructions to change every four hours. The following day a generalized morbilliform eruption appeared and the patient was hospitalized. The buccal mucosa was eroded opposite the lower left first molar tooth. The latter had been filled with amalgam one year before. Within four days the hand showed definite improvement and simultaneously the body eruption faded. Also the erosion in the mouth disappeared. At the end of a week the patient left the hospital. The saline compresses were discontinued after six days and a colloidal clay lotion was substituted. The lotion was withdrawn within a week as the result of rapid involution. The periphery of the lesion showed coalescent pea sized areas of depigmentation.

Laboratory Tests.—The routine examinations were negative. When the dermatitis had cleared, patch tests were performed with the remedies. The tincture of the organic mercurial induced only an erythema. The burn ointment was 4 plus, producing a miniature bullous lesion. The manufacturer supplied the ingredients and all patch tests were negative except the organic mercurial, which was applied in an aqueous dilution of 1:100,000. This dilution produced a bullous lesion. Again the tincture induced a simple erythema. The patch test with the aqueous organic mercurial produced a flare of erythema about the site, and simultaneously the erosion appeared on the buccal mucosa opposite the amalgam filled tooth. There was no reaction opposite the older amalgam filled teeth.

Progress.—All was well with this patient for six weeks, when suddenly a bullous dermatitis appeared on the palmar and medial surfaces of the middle and ring fingers of the left hand. Some thermometers had been removed from a solution of mercury bichloride 1:100. The patient had been warned of a mercury sensitivity. Two weeks later a patch test with mercury bichloride 1:100,000 produced a bullous lesion at the site. Again the erosion appeared in the mouth. The areas of depigmentation on the hand have persisted for four months.

Comment.—Several superficial burns caused a total disability of the left hand for two months and a week of hospitalization. Three consultants advised a change of education so as to avoid mercury contact. The acquired mercury sensitivity dates from this episode.

CASE 2.—R. A., a white boy aged 13, a farm boy, was referred for a dermatitis of the right elbow, knee and forehead.

History.—Two weeks previously the patient fell off a pony and scratched the skin of the knee and elbow. The areas were wiped with kerosene and a burn ointment was applied, followed by a pink salve, boric acid ointment and a white salve. A week later a dermatitis appeared on the forehead limited by the sweat band of a straw hat. The same hat had been worn the two previous seasons.

Examination.—The forehead showed two rectangular areas of dermatitis. The right knee and elbow region showed a weeping and crusted inflammation.

Course.—Saline compresses were applied for four days, changed three times daily. A colloidal clay paste was then

applied for one week. The area of dermatitis on the forehead cleared in ten days, that on the elbow and knee in less than three weeks.

Laboratory Tests.—Routine examinations were negative. All patch tests were negative except the leather hat band and the burn ointment. The label of the latter declared thirteen different chemicals, including an organic mercurial. The ingredients have been requested but as yet they have not been received.

Comment.—After the dermatitis involving the extremities had cleared, the straw hat was worn without causing trouble. A later patch test to the sweat band was negative. This episode caused a partial disability of five weeks.

CLASS 2.—Dermatitis—atopic or contact:

CASE 1.—S. G., a white woman aged 30, a housewife, was seen for a generalized dermatitis.

History.—Since puberty the patient had had recurrent attacks of dermatitis involving the atopic areas each spring. Four days previously she applied a salve recommended by a friend. The following day the areas of existing dermatitis became acutely inflamed.

Examination.—The flexor surfaces of the extremities, the neck, the chest and the abdomen showed a diffuse, brightly erythematous dermatitis. It outlined the sweep of the hand over the involved areas.

Course.—A cleansing bath was advised followed by a tepid bath to which had been added 2 cups of oatmeal. A colloidal paste containing 5 per cent olive oil was used twice daily thereafter. The dermatitis cleared in less than ten days.

Laboratory.—Routine examinations were negative. A patch test with the ointment was 4 plus. The site showed a brilliant erythema. The ointment was a refill prescription and it was impossible to learn its composition.

CASE 2.—B. E., a white man aged 48, a mailman, was referred for a dermatitis of the right forearm, thigh and abdomen.

History.—Two weeks previously while painting his house the patient noted one evening several streaked blebs on the right forearm. The following day a poison oak lotion was obtained and applied. Several days later the arm began to swell and the skin became covered with blisters. Three daily injections of a preparation for poison oak were given and then the lesions on the abdomen and thigh appeared. For the last four days a white salve had been used.

Examination.—The right arm showed a tremendous edema and inflammation. The bony markings were obliterated. The skin was a mass of discrete and coalescent vesicles which brought to mind the appearance of a cobbled stone street. The lower right quadrant of the abdomen was covered by a giant urticarial wheal, and a lesion of about the same size involved the lateral midportion of the thigh.

Course.—The right arm was elevated and saline compresses were applied. They were changed four times daily. Within four days the edema had lessened and many of the vesicles had ruptured or exfoliated. A colloidal clay lotion was applied for one week. By this time the dermatitis was rapidly clearing.

Laboratory Tests.—Routine examinations were negative. All patch tests were negative except the poison oak lotion. A cluster of vesicles were visible at the test site. The manufacturer supplied the ingredients, and the irritant was grindelia. The patch tests with each remained for nine days.

Comment.—This patient was partially disabled for one month.

CLASS 3.—Insect bites and parasites:

CASE 1.—C. L., a white man aged 31, a schoolteacher, was seen for a dermatitis of the left leg.

History.—The patient went fishing six weeks before and noticed that evening several red spots on his leg. He assumed that they were due to chiggers. A solution of blue vitriol was applied, and the following day the area presented an angry appearance. During the ensuing weeks he applied a perfumed

tar, a red liquid, a mentholated salve, a white tar, a talc cold cream and a green liquid.

Examination.—The skin over the middle third of the left leg showed an intense inflammatory reaction, and throughout were patches of vesicles intermingled with pustules. There were also scattered areas of gangrene, quarter (24 mm.) to pea size. The less involved skin was stained a bluish green.

Course.—Saline compresses changed four times daily for five days produced a remarkable reformation. The gangrenous areas sloughed, leaving punched out erosions. The pustules and stains had disappeared. A colloidal clay paste was applied for one week and then discontinued. Within less than three weeks the involution was about complete.

Laboratory Tests.—Routine examinations were negative. All patch tests were negative except for the blue vitriol and the perfumed tar. Both showed a cluster of vesicles and an intense inflammatory reaction. Each persisted over a week.

Comment.—There was partial disability of the left leg for nine weeks.

CASE 2.—M. W., a white woman aged 42, a clerk, was referred for a dermatitis of the neck and face.

History.—Two weeks previously the patient was told that she had some pimples on her neck that looked like insect bites. A friend advised a salve containing picric acid. After she had used this salve on the neck, chin and mandibular region of the face a redness appeared, slowly increasing in intensity. For the last ten days a mentholated petrolatum was used.

Examination.—The areas to which the salve had been applied showed a pronounced erythema with considerable edema. Many of the hair follicles over the back of the neck showed pustules. The middorsal area of the neck was hard and tender to palpation, with concomitant signs of an incipient carbuncle. The condition of the patient necessitated hospitalization.

Course.—Saline compresses led to a prompt clearing of the inflammation and edema. The folliculitis of the neck slowly subsided. After six days of compresses the carbuncle drained profusely. The patient left the hospital on the eighth day.

Laboratory Tests.—Routine examinations were negative. A twenty-four hour urine specimen was negative and the sugar tolerance was within normal limits. After twelve hours the patch test with the salve said to contain picric acid showed a 4 plus reaction. The reaction at the site persisted over a week. The other patch tests were negative.

Comment.—It is interesting that there were no signs of a carbuncle until eight days after the picric ointment had been applied.

CLASS 4.—Chronic dermatoses characterized by remissions and exacerbations.

CASE 1.—L. W., a white man aged 30, a dry cleaner, was referred for dermatitis of the right thumb.

History.—The patient was told three months before that he had a fungous infection of the thumb. A sulfonamide ointment was applied for a week, later a "cream" and for the past eight weeks a tar salve.

Examination.—The nail was hypertrophic, showing precipitous transverse ridges. The distal portion of the nail was separated from the plate about one third its length by a mass of yellowish debris. The dorsal skin of the thumb showed an inflammatory reaction with sufficient edema to cause this thumb to appear about one fourth larger than the left.

Course.—Saline compresses were applied and changed three times daily. After three days the cuticle and subungual region were scraped free of dead epithelium and impacted tar. A colloidal clay paste was used for one week. By this time the edema had lessened, the inflammation was subsiding and within three weeks the thumb was about normal. Normal nail growth was visible within four weeks.

Laboratory Tests.—Routine examinations were negative. Repeated scrapings for fungi were negative. All patch tests were negative except the tar salve, which showed a 2 plus reaction. The latter persisted for eight days.

that the fertilized egg usually implants on one of the two relatively flat uterine walls, either anterior or posterior—that the placenta practically covers one of the two seen for because of that becomes quite readily dis-

History.—In a lateral soft tissue x-ray film. The he had had recumbent film in labor was mainly due to before he applied a and Dippel and Brown,¹⁰ and it same salve had done woned that it should be one of the the toes were swollen, and why in labor. This film necessary. While in the hospital a of the fetus and, if of an organic mercurial, potassium permanganate is posterior, bath solution and a mercury ointment were applied, shows the left the hospital voluntarily after two weeks.

Examination.—The toes and dorsal surface of the foot showed an intense inflammation with edema, weeping and crusting. The foot was stained a brownish black.

Course.—The patient was hospitalized for three days. The foot was elevated and the saline compresses were changed every hour. Beginning the fourth day a colloidal clay lotion was applied and discontinued after ten days. The middorsal portion of the foot showed an irregular area of slate colored pigmentation. The patient was wearing a shoe for the first time in six weeks. The pigmentation has persisted.

Laboratory Tests.—Routine examinations were negative. Three attempts to demonstrate fungi were unfruitful. The trichophyton and iodomyacin tests were negative (forty-eight hours). All patch tests were negative except the tincture of the organic mercurial and the mercury ointment. These were 4 plus and produced a flare of erythema around the site and a macular dermatitis involving the arms and trunk. The dermatitis persisted for three days and the patch tests for over a week.

Comment.—There was total disability of the left foot for eight weeks, over two of which were spent in the hospital.

COMMENT

These case reports, selected from those observed, illustrate the cause of overtreatment dermatitis. The initial skin lesion registered complaint—increased erythema, edema and weeping—from the first application. Instead of the preparation being removed something else was applied, and the more the lesion complained the greater was the variety of applications applied. The admixture of antipruritics, antiseptics, astringents, rubefacients, keratolytics, fungicides, oxidizing agents and reducing agents in various vehicles unleashed on innocent lesions a veritable chemical maelstrom. The lesions do weep, in fact huge tears of chemical irritation.

It should be emphasized that the saline compress and the colloidal clay were not instrumental in healing the dermatitis. The former served to free the skin of irritants, the latter a covering while the skin healed. The continuation of either beyond their period of usefulness would have complicated and delayed the involution process.

The creation of the Council on Pharmacy and Chemistry served to rob of glamour the old oral concoctions and potions; it sifted the wheat from the chaff. Today oral drugs are fairly well defined. Dosage, indications and contraindications are familiar to all. There is constant vigilance for signs and symptoms of toxicity. Topical drug therapy, on the other hand, is generally speaking still in the stage of "try—stop—try." In the treatment of skin disease the admonition Try this preparation, if no improvement try this one, and so on, is familiar. It is this practice that causes overtreatment dermatitis. In skilled hands this "try—stop—try" method is controlled. In unskilled hands, which treat the major portion of acute dermatoses, too much treatment often results. It is the acute derma-

tosos that require the greatest treatment control and consideration. It seems that a concise chemical and pharmacologic evaluation of drugs used on the skin might lead to a decline of the incidence of overtreatment dermatitis. That is another sifting of the wheat from the chaff and this time to rob of glamour the cutaneous drugs, irrespective of the real or fancied virtues of the particular vehicle.

SUMMARY

The tendency of persons to apply remedies on skin lesions can be used to great advantage by the physician. The technic of the patch test is not difficult.³ The procedure of the past-treatment patch test furnishes the following data:

1. It reveals the presence of an irritant or sensitizer in the remedies applied.
2. It permits a "cooling off" period, as it were, to observe the effects on the lesion of the simplest of measures.
3. It permits prescribing a preparation avoiding the pitfalls of those already used.
4. Finding an irritant or sensitizer in a medicament often aids in determining the original source of the dermatitis. Example: The past-treatment patch test with a tar salve was strongly positive. The patient then recalled that the dermatitis appeared after tarring a roof.
5. A positive patch test to a substance in a remedy invites tracing the distribution of the substance in normal trade channels which may disclose additional contacts and help in deciding the occupational or non-occupational etiology of the dermatitis.

CONCLUSIONS

If remedies have been applied to a skin lesion, the past-treatment patch test provides data of etiologic, diagnostic and therapeutic importance. For the most part patients have shown an eager interest in uncovering and comprehending the evils of their own doing. The manufacturers of proprietaries have been most cooperative in furnishing individual ingredients. The simple expedient of the past-treatment patch test would lessen the incidence of overtreatment dermatitis, thereby avoiding unnecessary disability, even needless hospitalization.

3. Sulzberger, M. B.: Year Book of Dermatology and Syphilology, Chicago, Year Book Publishers, Inc., 1943, pp. 7-47.

Medical Facilities on the Gilbert, Ellice, Ocean and Nauru Islands.—Prior to the war the public health, medical and hospital facilities in the Ellice, Gilbert, Ocean and Nauru islands were considered to be adequate for the health and medical requirements of the people. Public health was under the direction of English health officers, who were assisted by several native medical practitioners and many locally trained dressers. Rainfall and wells furnish the only fresh water available on the islands; the supply is limited, especially in the southern Gilbert Islands. Systems in which sewage is water borne and a few chemical systems were in operation at the foreign establishments on Ocean and Nauru islands and in a few of the foreign homes. In other foreign homes the pan and bucket system was used. Most of the natives use over the sea latrines built on the beaches below high tide mark and connected to the shore by bridges, or they use the beach itself. Practically no supplies of food excepting coconuts and a few dishes can be obtained locally. Medical and hospital supplies are imported.—Simmons, James S.: Global Epidemiology, Philadelphia, J. P. Lippincott Company, 1944.

THE INFLUENCE OF PLACENTAL SITE
ON FETAL PRESENTATION

RICHARD TORPIN, M.D.

AUGUSTA, GA.

Occiput posterior presentation of the fetus since its designation and study as such by Baudelocque, Capuron and Naegle more than a century past has aroused increasing interest among obstetricians. Because of high incidence and poor management it probably has caused more obstetric disorder than any other single condition. Until the introduction of x-ray study of the size and shape of the pelvic cavity early in this century and of the study of the contour of the uterine cavity, only recently begun, all theories in regard to the etiology of occiput posterior presentation were speculation.

Occiput posterior presentation may be classified into three categories:

1. Primary occiput posterior presentations occurring at the onset of labor which rotate in labor to occiput anterior presentations.
2. Those which may rotate to cephalic transverse presentations and become stationary, so-called cephalic deep transverse arrests.
3. Those that are delivered as occiput posterior.

The etiology of these three types should be considered separately. In the German literature the incidence of occiput posterior is usually very low, 1 to 2 per cent, but, as Siedentopf¹ states, they recognize only those cases which fail to rotate. Williams and Stander² give the incidence as 11.3 per cent, or 618 cases in 5,488 labors. Williams stated that early in labor the incidence may have been much increased over these figures, because some may have rotated anteriorly before the examination. Danforth³ studied 1,565 private patients, examined each in labor and found an incidence of occiput posterior presentations in 27.1 per cent. Melhado's⁴ incidence at the Royal Victoria Hospital, Montreal, was 13.8 per cent. Cosgrove⁵ found the incidence 5.1 per cent in 15,000 consecutive deliveries but stated that it probably was far too low, because many patients were admitted too late for the primary presentation to be noted. Furthermore, the diagnoses were made in association with routine rectal examinations. Very likely, as Crotty⁶ states, 20 per cent of all labors with cephalic presentation begin with the occiput posterior. Caldwell, Moloy and D'Esopo⁷ in two hundred x-ray studies in labor found that occiput posterior presentation made up 20 per cent of the total. The true figure will be ascertained only by a large series of x-ray films taken at the onset of labor. A satisfactory single film is one taken of the soft tissues laterally. In this the true presentation is almost infallibly recorded. In this small series of 500 such films taken in the first stage of labor, the incidence of occiput

From the Department of Obstetrics and Gynecology, University of Georgia School of Medicine.

Read before the Section on Obstetrics and Gynecology, at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1. Siedentopf: Frequency and Etiology of Occipitoposterior Presentation, Arch. f. Gynäk., 156: 225 (Dec.) 1933.

2. Williams, J. W.: Obstetrics, edited by H. J. Stander, ed. 8, New York, D. Appleton-Century Company, Inc., 1941.

3. Danforth, W. C.: Management of Occiput Posterior; Further Consideration of Manual Rotation, Am. J. Obst. & Gynec. 28: 756 (Nov.) 1934.

4. Melhado, G. C.: Occipitoposterior Presentation: Method of Management, with an Analysis of 976 Cases, Am. J. Obst. & Gynec. 26: 676 (Nov.) 1933.

5. Cosgrove, A.: Occipitoposterior Positions, Am. J. Obst. & Gynec. 21: 402 (March) 1936.

6. Crotty, J. G.: Occiput Posterior: Statistical Study from Chicago Maternity Center, Am. J. Obst. & Gynec. 30: 97 (July) 1935.

7. Caldwell, W. E.; Moloy, H. C., and D'Esopo, D. A.: A Roentgenological Study of Mechanism of Engagement of Fetal Head, Am. J. Obst. & Gynec. 28: 824 (Dec.) 1934.

posterior presentations was 24 per cent. This included all cases in which the occiput deviated as much as 5 degrees posterior to the true transverse.

In relation to parity, Melhado, in an analysis of 976 cases during a period of six years, found occiput posterior presentation in 513 primiparas and in 463 multiparas. Lewis⁸ in 728 cases found it to occur 305 times in primiparas and 423 in multiparas. Plass⁹ found practically equal numbers in primiparas and in multiparas in 635 instances.

In regard to whether the occiput is directed posteriorly to the right or to the left, all writers agree that the right prevails over the left. Plass, in his classic paper in 1916, found the relative incidence to be 437 right to 181 left. Danforth found 386 right to 57 left, Melhado, 619 right to 357 left, Lewis, 490 right to 238 left, Mast¹⁰ 189 right to 16 left and Vaux¹¹ 212 right to 118 left.

Several accurate x-ray studies have been made of the fetal presentation in relation to the pelvic architecture. The first in 1920 was by Fabre and Trillat,¹² who showed 12 pelves with high assimilation of the vertebrae and long anteroposterior diameter. In 7 of these there occurred persistent occiput posterior presentation. In 1933 these findings were confirmed by Thoms,¹³ who showed the pelvic cavity measurements in association with 12 persistent occiput posteriors. In 5 of these the anteroposterior diameter averaged 1.25 cm. longer than the transverse diameter of the inlet. In the other 7 the anteroposterior diameter averaged only 0.75 cm. less than the lateral.

A more detailed study by the stereoroentgenographic method was reported in 1934 by Caldwell, Moloy and D'Esopo¹⁴ in a review of 200 labors, all with cephalic presentation. They revealed a distinct inclination for the fetal head to engage with its anteroposterior diameter parallel to the widest diameter of the inlet, so that in gynecoid and android pelves with wide inlets the tendency was for occiput transverse presentations. In pelves with long anteroposterior diameter and relatively narrow side walls, i. e. anthropoid pelves, there was a definite tendency for the head to engage either occiput posterior or occiput anterior. The detailed findings are revealed in table 1.¹⁵

In 1941 D'Esopo¹⁶ by the same method reported the study of 100 labors with occiput posterior presentations of the fetus, and in 83 per cent he noted some degree of narrowing of the forepelvis and ample anteroposterior diameter, i. e. anthropoid pelves. In the other 17 per cent, as a rule, the inlet was either very large or round.

In the past decade there has been a growing appreciation of the shape of the pregnant uterus. It has been shown to be roughly pyramidal, with the breadth of the fundus wider than its greatest anteroposterior diameter in such a manner that the horns are usually well shown even at term. It has also been revealed¹⁷

that the fertilized egg usually implants on one of the two relatively flat uterine walls either anterior or posterior and that the placenta practically covers one of the two walls and because of that becomes quite readily distinguishable in a lateral soft tissue x-ray film. The appreciation of this film in labor was mainly due to Snow and Powell¹⁸ and Dippel and Brown,¹⁹ and it has been so well established that it should be one of the routine technics of radiography in labor. This film shows definitely the presentation of the fetus and, if cephalic, it reveals whether the occiput is posterior, transverse or anterior. This film usually shows the shadow cast by the placenta and thereby becomes valuable in such conditions as placenta previa and premature separation of the normally implanted placenta. It shows the exact descent of the presenting part and degree of engagement or nonengagement. Snow and his associates noted that, as a rule, the fetus faced the placenta, and this fact was observed so frequently in our routine studies made on all primiparas over a period of years that it was decided to study the relationship of the placental site to the fetal presentation. The series comprises possibly 600 lateral soft tissue films taken, usually in the first stage of labor, mainly, but not exclusively, in primiparas. Unless the placenta on either the anterior or the posterior wall was distinctly shown, the film was discarded, leaving 500 films which compose the details of this paper. Three hundred and

TABLE 1—Engagement in Gynecoid, Android, Anthropoid and Combined Types

	Gynecoid	Android	Anthropoid	Combined
Posterior oblique position	10	20.5	28.5	18.5
Transverse position . . .	60	71.0	37.5	60.0
Anterior oblique position . .	20	8.5	17.0	16.0
Direct occipitoanterior position	1	...	17.0	5.5

sixty-three of these films have been studied and reported previously.²⁰ This paper acts as a check on the previous findings, which altered the commonly accepted conclusions so much as to warrant further confirmation or denial.

Previously Pendleton²¹ and Melhado suggested that possibly the location of the placenta might have some influence on the fetal presentation, and it is well known that when the placenta is low lying, as in placenta previa, there is a tendency for the presenting part to fail to engage well.

The shape of the bony pelvic cavity has considerable effect on the mechanism of labor in occiput posterior presentation. Hanson²² in 1934 drew attention to the narrow midpelvis as revealed by inward protrusion of the ischial spines as a cause of persistent occiput posterior. He showed that primary occiput posterior occurring with a narrow midpelvis became persistent in 20.9 per cent of instances but that primary occiput posterior rotated spontaneously in all but 1.6 per cent when the midpelvis was wide.

18 Snow, W. J., and Powell, C. B. Roentgenvisualization of Placenta, *Am J Roentgenol* 31: 37 (Jan.) 1940

19 Brown, W. H., and Dippel, A. L. Uses and Limitations of Soft Tissue Roentgenography in Placenta Previa and in Certain Other Obstetrical Conditions, *Bull Johns Hopkins Hosp* 66: 90 (Feb.) 1940. Dippel, A. L., and Brown, W. H.: Direct Visualization of Placenta by Soft Tissue Roentgenography, *New England J. Med* 223: 316 (Aug. 29) 1940. Roentgenvisualization of Placenta by Soft Tissue Technique: Review of Two Years' Experience, *Am J Obst & Gynec* 40: 986 (Dec.) 1940

20 Torpin, Richard, and Holmes, L. P. The Influence of the Placental Site upon Fetal Presentation, *Am J Obst & Gynec* 46: 268 (Aug.) 1943

21 Pendleton, G. F., in discussion on Calkins: Occiput Posterior Normal Presentation, *Am J Obst & Gynec* 27: 691 (May) 1934.

8. Lewis, M. S. Management of Occipitoposterior Position, with Report of 728 Cases, *J Tennessee M A* 28: 499 (Dec.) 1935

9. Plass, E. D. A Statistical Study of 635 Labors with the Occiput Posterior, *Bull Johns Hopkins Hosp* 27: 164 (June) 1916

10. Mast, W. H. Review of 205 Cases of Occipitoposterior Position, *Am J Obst & Gynec* 26: 74 (July) 1933

11. Vaux, N. W. The Method of Delivery and End Result of 212 Cases of Occiput Posterior Position, *Am J Obst & Gynec* 20: 782 (Dec.) 1930

12. Fabre and Trillat. Bassins a diametres anteroposterieurs pre dominants et degagement en occipito sacree, *Bull Soc d obst et de gynec de Paris* 9: 486 1920

13. Thoms, H. Type of Pelvis Intimately Associated with Occipitoposterior Position, *Surg, Gynec & Obst* 56: 97 (Jan.) 1933

14. Caldwell, W. E., Moloy, H. C., and D'Esopo, D. A. A Roentgenological Study of Engagement of the Fetal Head, *Am. J. Obst & Gynec* 28: 824 (Dec.) 1934

15. Table 5, page 829, in article by Caldwell, Moloy and D'Esopo: "Dominant et degagement en occipito sacree, Mechanism and Treatment," *Am J Obst & Gynec* 42: 937 (Dec.) 1941

17. Rock, J., and Hertig, A. T. Some Aspects of Early Human Development, *Am J Obst & Gynec* 44: 973 (Dec.) 1942.

In 1935 Caldwell, Moloy and D'Esopo,²³ writing on the mechanism of labor, came to the same conclusions in regard to persistence of occiput posterior presentation, and they gave several illustrations in all of which there were a narrow midpelvis and inward protruding ischial spines in, as a rule, the anthropoid type of pelvis.

In our clinic it is the rule to care for the woman in labor to such an extent with the use of fluids, dextrose, oxygen and sedation (and blood transfusions, if necessary) that all but a very few deliver spontaneously.

a narrow midpelvis, as brought out by Hanson, Thoms and Caldwell and their associates. But in the other 6 there was found in each case a justomajor pelvis or a very small fetal head in a normal pelvis. In the latter groups apparently there was little in the fetopelvic relationship to force the head to rotate and, as a consequence, it delivered eventually without rotation. This then is an additional factor in the etiology of persistent occiput posterior.

The accompanying chart reveals the collected evidence: There were in all 500 patients, 234 white

PLACENTA ANTERIOR WALL 111

CAUCASIAN WOMEN

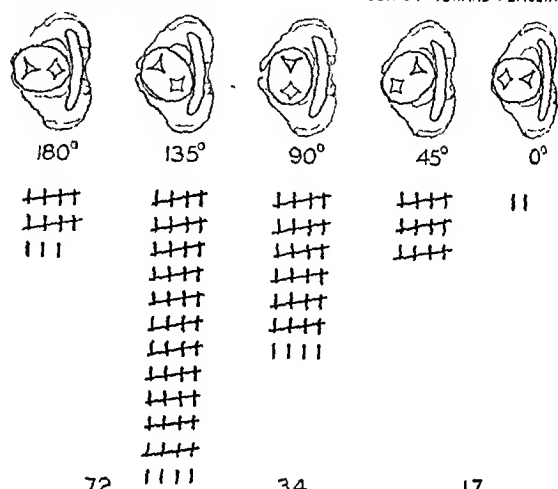
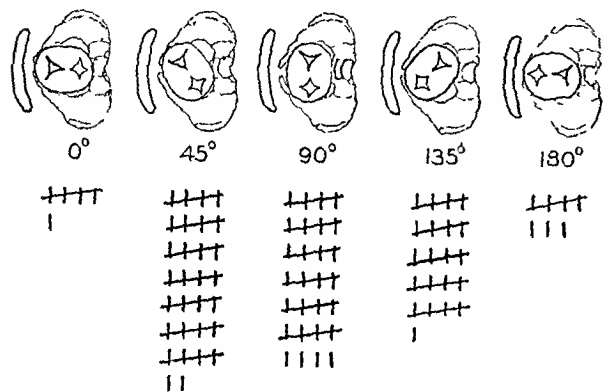
PLACENTA POSTERIOR WALL 123

OCCIPUT TOWARD PLACENTA

OCCIPUT AWAY FROM PLACENTA

OCCIPUT AWAY FROM PLACENTA

OCCIPUT TOWARD PLACENTA



43

34

34

72

34

17

PLACENTA ANTERIOR WALL 132

NEGRO WOMEN

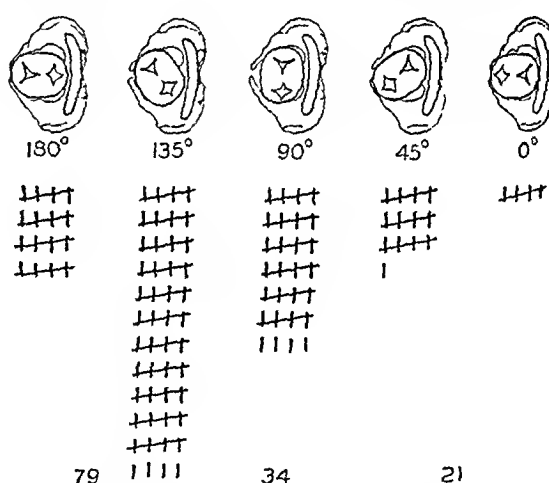
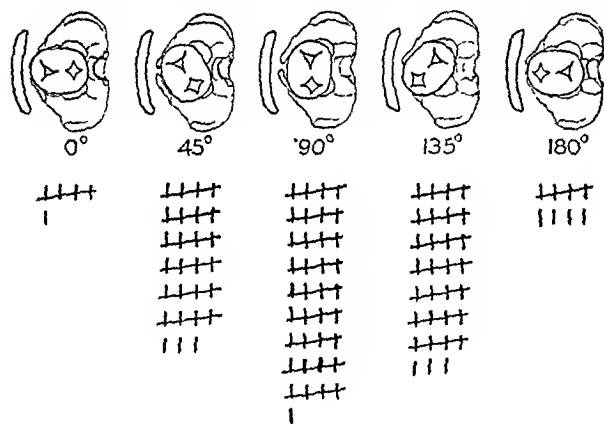
PLACENTA POSTERIOR WALL 134

OCCIPUT TOWARD PLACENTA

OCCIPUT AWAY FROM PLACENTA

OCCIPUT AWAY FROM PLACENTA

OCCIPUT TOWARD PLACENTA



39

46

47

79

34

21

To the left of the midline the figures are represented with the placenta on the anterior uterine wall, to the right of the midline the placenta is represented as on the posterior uterine wall. The cephalic presentation is illustrated with the total number of such presentations tabulated below each figure. The placenta was on the anterior wall in 83 instances and on the posterior wall in 104.

Otherwise, if forceps are used in more than 1 or 2 per cent of all deliveries, the obstetrician is in no position to state whether a given patient would or would not have delivered. Now with this sort of management every so often a fetus will be delivered with the occiput posterior. A record of all these cases is kept and a correlation then is made with all facts known, including x-ray study of the pelvis. From a study of 12 consecutive cases it was revealed that in 6 there was associated

women and 266 Negro women. (All breech cases, all indistinct films and those in which the placenta was not definitely outlined on either wall were excluded.) Among the white women, 111 placentas were located on the anterior and 123 on the posterior wall. Dippel and Brown noted equal distribution between the two walls. We, however, over a period of years have made comment on the fact that our series had more on the posterior wall and we were of the opinion that 40 per cent were anterior and 60 per cent posterior. This study reduces the difference to 47 per cent on the anterior and 53 per cent on the posterior wall, a further

23. Caldwell, W. E.; Moloy, H. C., and D'Esopo, D. A.: Further Studies on Mechanism of Labor, *Am. J. Obst. & Gynec.* 30:763 (Dec.) 1935.

reduction over the previous study of 45 per cent to 55 per cent.

From analysis of the data noted in the chart it becomes apparent that in 500 cases there were 239 (46.5 per cent) occiput anterior presentations, 140 (29.5 per cent) occiput transverse presentations²⁴ and 119 (24 per cent) occiput posterior presentations at the time of making the films in the first stage of labor. Still further analysis reveals that there were 243 cases with the placenta situated on the anterior wall of the uterus. Among these, 82 (33.6 per cent) were associated with occiput anterior presentation of the fetus, 80 (33 per cent) with occiput transverse and 81 (33.3 per cent) with occiput posterior presentation. On the other hand 257 placentas were situated on the posterior wall, 151 (59 per cent) occiput anterior, 68 (26.5 per cent) occiput transverse and 38 (14.5 per cent) occiput posterior. Thus when the placenta was anterior the incidence of occiput anterior presentation was approximately two thirds of what it was when the placenta was posterior, and when the placenta was anterior the incidence of occiput posterior presentations was more than twice what it was when the placenta was posterior.

An additional correlation was made of the fetal presentation in relation to the location of the placenta, as illustrated in the nine anatomic plates in the Atlas of Anatomy of Clinical Obstetrics by Canton and Gonzales of Buenos Aires, Argentina, 1910. In 4 cases the placenta lay on the anterior wall of the uterus and the fetus in labor presented occiput anterior once, occiput posterior once and occiput transverse twice. In 5 cases the placenta lay on the posterior wall and the fetus in labor presented occiput anterior in all 5 cases. In this small series, then, only once did the occiput lie toward the placenta.

Elsewhere²⁵ it has been shown that the pregnant uterus is like an irregularly globular bag, wider at the fundus than at its anterior posterior diameter. Now the cavity of this bag has been shown usually to have two

TABLE 2.—Site of Placenta

Presentation in First Stage of Labor	Anterior (243)	Posterior (257)
Occiput anterior	82 (33.6%)	151 (59%)
Occiput transverse	80 (33%)	68 (26.5%)
Occiput posterior	81 (33.3%)	38 (14.5%)

essentially foreign bodies pressing into it, either from one anterior or posterior wall or from both; one of these is the lower lumbar maternal spine and the other is the bulky placenta. Calkins²⁶ intimates that the full urinary bladder may also be a factor. The fetus, on the other hand, is essentially a parallelopiped with one concave ventral surface opposing a convex dorsal surface. When this geometric figure lies in the uterus, the great tendency is for the convex dorsum to lie opposite or at least not toward the greatest indentation, which is no doubt the lumbar spine. (This is very evident at any full term autopsy.) However, the placental foreign body probably has a tendency to alter this position accentuating its effect, if it happens to lie on the same wall (the posterior) as the promontory, and a tendency to cancel the effect if it lies on the anterior wall.

CONCLUSIONS

1. The great majority of placentas are located on the anterior or posterior wall of the uterus.
2. The ratio found in this study was 47 anterior to 53 posterior.
3. The placenta located on the anterior wall had a definite tendency to the production of occiput posterior presenting fetuses. Mathematically, when the placenta was anterior the chance for occiput posterior presentation of the fetus was double what it was if the placenta was posterior, 33.3 per cent to 14.5 per cent.
4. The placenta located on the posterior wall had an increased tendency to produce occiput anterior presentation in the fetuses. In this incidence, when the placenta was on the posterior wall the chance of the presentation being occiput anterior was nearly twice what it was when the placenta was anterior, 59 per cent to 33.6 per cent.
5. The incidence of occiput transverse presentation of the fetus in the first stage of labor was 26.5 per cent if the placenta was located on the posterior wall and 33 per cent if it was located on the anterior wall.

A SIMPLE CLINICAL METHOD FOR THE ASSAY OF PENICILLIN IN BODY FLUIDS

AND FOR THE TESTING OF PENICILLIN SENSITIVITY OF BACTERIA

JEAN V. COOKE, M.D.
ST. LOUIS

Many of the methods for penicillin assay were devised and used primarily for testing solutions during the production of penicillin and are not easily applicable to the determination of titers of body fluids in patients under treatment. These have been reviewed by Foster and Woodruff,² the classic test of Florey² being in most common use. Of the studies made on body fluids, the method described by Rammelkamp³ involving the use of serial broth dilutions and a strain of hemolytic streptococcus was used by Rammelkamp and Keefe.⁴ Rosenberg and Sylvester⁵ have used Foster's method⁶ of serial broth dilution with *Staphylococcus aureus* and turbidimetric measurements, while Romansky and Rittman⁷ have used a method described by Rake and Jones⁸ based on the property of the inhibition of hemolysin production of streptococci by penicillin. The procedure to be described here is believed to be simpler than some of the other methods mentioned, is easily applied to the study of body fluids for penicillin titer, and utilizes only materials and methods familiar to all

From the Department of Pediatrics, St. Louis University School of Medicine, and the St. Louis

1. Foster, J. W., and Woodruff, J. W. Aspects of Penicillin: I. Methods of Assay, *J. Biol. Chem.* 40: 401 (Aug.) 1943.

2. Florey, H. W., and others: Further Observations on Penicillin, *Lancet* 2: 177 (Aug. 16) 1941.

3. Rammelkamp, C. H. A Method for Determining the Concentration of Penicillin in Body Fluids and Exudates, *Proc. Soc. Exper. Biol. & Med.* 51: 95 (Oct.) 1942.

4. Rammelkamp, C. H., and Keefe, C. S.: The Absorption, Excretion, and Distribution of Penicillin, *J. Clin. Investigation* 22: 425 (May) 1943; The Absorption, Excretion, and Toxicity of Penicillin Administered by Intrathecal Injection, *Am. J. M. Sc.* 205: 342 (March) 1943.

5. Rosenberg, D. H., and Sylvester, J. C.: The Excretion of Penicillin in the Spinal Fluid in Meningitis, *Science* 100: 132 (Aug. 12) 1944.

6. Foster, J. W.: Quantitative Estimation of Penicillin, *J. Biol. Chem.* 144: 282 (June) 1942.

7. Romansky, M. J., and Rittman, S. E.: Penicillin. Prolonged Action in Beeswax Peanut Oil Mixture, *Bull. U. S. Army M. Dept.*, October, 1944, no 81, p. 43.

8. Rake, S., and Jones, H.: A Rapid Method for Estimation of Penicillin, *Proc. Soc. Exper. Biol. & Med.* 54: 189 (Nov.) 1943.

24 These are exact occiput transverse presentations. If they deviated more than 5 degrees they become occiput anterior or occiput posterior.

25 Torpin, R.: Study of Placental Site and Intrauterine Relation by Original Method of Amniotic Sac Distention, *J. Obst. & Gynaec. Brit. Emp.* 45: 993 (Dec.) 1938.

26. Calkins, L. A.: Occiput Posterior Normal Presentation, *Am. J. Obst. & Gynec.* 43: 277 (Feb.) 1942; Etiology of Occiput Presentations, *ibid.* 37: 618 (April) 1939.

bacteriologic technicians. In addition it can be readily used for determination of the penicillin sensitivity of various strains of *Staphylococcus aureus* or other organisms. A large number of titrations on blood serum and other body fluids, including spinal fluid, pleural and ascitic fluids and subcutaneous edema fluid, have been performed, and the results have appeared to be quite consistent. They will be summarized and discussed in a separate report.⁹

The method consists essentially in determining the lowest concentration of penicillin which will produce complete inhibition of growth of a standard strain of *Staphylococcus aureus* on a plain agar Petri plate and is carried out in the following manner:

Ordinary tryptose agar plates with a depth of 5 to 6 mm. are allowed to dry until all free moisture and condensation fluid have evaporated. On the bottom of the plate near the center, an area 2 by 5 cm. is marked on the glass with a wax pencil, and on the surface of the agar over this area is measured 0.1 cc. of the fluid to be tested, which is evenly spread over the 2 by 5 cm. "window." The plate is then placed in the ice box, care being taken that the surface remains flat, since tilting will spread the material beyond the

unit per cubic centimeter. In routine tests using 0.1 cc. of blood serum or other body fluid, if complete inhibition occurred, the penicillin titer was considered at least 0.2 unit per cubic centimeter. A more exact titer could be obtained by diluting the smallest amount

TABLE 1.—Scheme for Dilution of Body Fluid to Titrate Penicillin Content with *Staphylococcus Aureus* 209P

Tube Number	Serum or Other Fluid	Isotonic Saline Diluent	Penicillin Titer Units per Cc. When 0.1 Cc. Is Used in Test
1.....	0.1	...	0.2
2.....	0.2	0.2	0.4
3.....	0.1	0.2	0.6
4.....	0.1	0.3	0.8
5.....	0.1	0.4	1.0
6.....	0.1	0.5	1.2
7.....	0.1	0.6	1.4
8.....	0.1	0.7	1.6
9.....	0.1	0.8	1.8
10.....	0.1	0.9	2.0

of the fluid producing such inhibition. A simple dilution scheme is illustrated in table 1 by which titers from 0.2 to 2.0 units per cubic centimeter may be determined. In routine tests only tubes 1, 2, 5 and 10, corresponding to titers of 0.2, 0.4, 1 and 2 units per cubic centimeter, were used and, if desirable, a later test to determine a more exact titer.

Certain general statements about the method may be made.

The agar plates used must be dry and free from visible moisture, since otherwise the test fluid or the inoculum will spread irregularly over the surface.

A rubber stamp with which the 2 by 5 cm. "window" may be outlined in ink on the bottom of the dish is convenient and saves much time in carrying out the tests.

The use of a "window" 2 by 5 cm. in size on the agar plate for the fluid to be tested is necessary, because 0.1 cc. of fluid is readily absorbed by the agar over such an area while with more fluid or a smaller area the absorption is much slower. Occasionally in fluids of low titer 0.2 cc. of the undiluted material (which would show a reading of 0.1 unit per cubic centimeter) has been used, but this requires a longer "drying period."

TABLE 2.—Scheme of Penicillin Dilution for Testing Sensitivity of Bacteria

Dilution or Plate Number	Penicillin Solution, Cc. (2 Units per Cc.)	Isotonic Solution of Sodium Chloride, Cc.	Units of Penicillin in 0.1 Cc.
1.....	0.1	...	0.2
2.....	5.0	5.0	0.1
3.....	4.5	5.5	0.09
4.....	4.0	6.0	0.08
5.....	3.5	6.5	0.07
6.....	3.0	7.0	0.06
7.....	2.5	7.5	0.05
8 ..	2.0	8.0	0.04
9 ..	1.5	8.5	0.03
10.....	1.0	9.0	0.02

It is important to keep the plates flat after receiving 0.1 cc. of fluid to be tested, because if tilted this fluid will spread beyond the 2 by 5 cm. window.

Absorption of the fluid by the agar does not occur more rapidly at incubator than at ice box temperatures, and the titers obtained by incubating at 37 C. tend to be slightly lower than when the refrigerator is used.

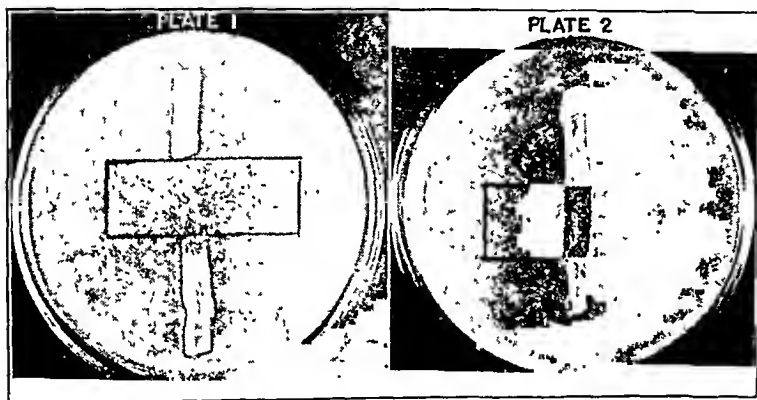


Fig. 1.—Complete inhibition (plate 1) of growth of a strain of *Staphylococcus aureus* by 0.03 unit of penicillin in the 2 by 5 cm. "window" and the lack of inhibition with 0.02 unit (plate 2).

marked area. After two to three hours the 0.1 cc. of fluid will have been absorbed into the agar in the 2 by 5 cm. window, leaving a dry surface. Inoculation of the prepared plate is then made by placing a large loopful of the broth *staphylococcus* culture on the surface of the plate at a short distance from the window and, with a sterile wire or thin glass rod bent at a right angle, the inoculum is lightly spread across the window in the form of a band about 1 centimeter wide. After incubation, the growth which develops along this band of inoculation stops sharply at the edges of the 2 by 5 cm. window if a sufficient concentration of penicillin was present in the fluid tested to inhibit the strain of *staphylococcus* used (fig. 1).

In the standardization of the method, tests of a number of strains of *Staphylococcus aureus* showed that the strain 209P,¹⁰ one of those in use by many laboratories, had the highest degree of penicillin sensitivity by this method. With this organism, growth was regularly completely inhibited by 0.02 unit of penicillin in 0.1 cc. and not by 0.01 unit. This has been expressed as 0.2

9. Cooke, J. V., and Goldring, David: The Concentration of Penicillin in Various Body Fluids During Penicillin Therapy, J. A. M. A. 127: 80 (Jan. 13) 1945.

10. This organism was obtained from the Food and Drug Administration together with some standard penicillin calcium through the kindness of Dr. Albert C. Hunter, director of the Bacteriological Division.

The p_H of the culture mediums routinely used has been 6.8 to 7.0. Using a standard penicillin, tests showed no difference between mediums with p_H of 6.5 and 7.0, but mediums with a p_H of 7.5 were less satisfactory.

For the standard *Staphylococcus aureus* (209P), a young 18 to 24 hour culture in broth has been used regularly, but the strength of the inoculum employed is apparently of little importance since the same complete inhibition occurs on the plate when the growth is heavy and confluent as when the culture is diluted so that only scattered discrete colonies grow. As a routine, a loopful of 1:10 dilution has been quite satisfactory for the inoculum.

No loss in penicillin titer in body fluids has been noted after twenty-four hours when kept at 4 C., but a definite decrease occurs after forty-eight hours.

MODIFICATION OF METHOD BY USING MULTIPLE INOCULUMS

The procedure described has been used in the study of body fluids from a number of cases reported separately.⁹ In observations on the penicillin sensitivity of various strains of *Staphylococcus aureus* which will be

of sensitivity from 0.02 to 0.1 unit in steps of 0.01 unit of penicillin, the three selected seemed best suited for routine clinical tests.

The photographs in figure 2 illustrate the appearance of such a test made on blood of an infant one hour after administration of 5,000 units of penicillin intramuscularly. Plate 1 had 0.1 cc. of undiluted serum, plate 2 0.1 cc. of serum diluted 1:1 and plate 3 0.1 cc. of serum diluted 1:2. The three strains mentioned and sensitive respectively to 0.02, 0.04, and 0.05 unit of penicillin were inoculated on each plate. In plate 1 all are inhibited, showing that more than 0.05 unit was present in the 0.1 cc. of serum, and the reading was more than 0.5 unit per cubic centimeter. Plate 2, with 0.05 cc. of serum, shows inhibition of the 0.04 unit strain (20) but not of the 0.05 unit strain (19), so that the reading is more than 0.08 but less than 0.1 unit, or 0.8 unit of penicillin per cubic centimeter. In the third plate, with 0.033 cc. of serum only the 0.02 unit strain (209) is inhibited and would be read more than 0.6 unit and less than 1.2 units.

This modification of the original method has simplified the examination of body fluids for penicillin and has given a somewhat more accurate titer.

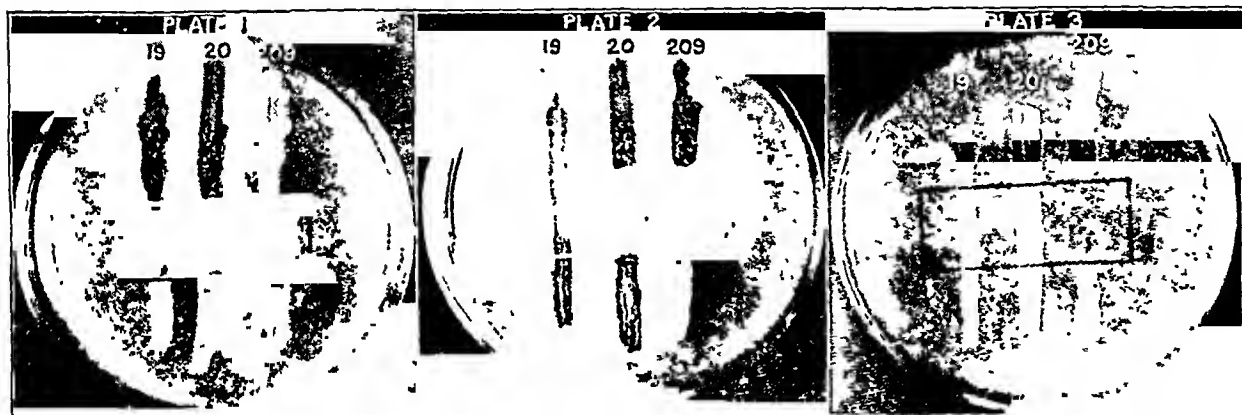


Fig 2—Penicillin assay of blood (serum) with 0.1 cc (plate 1), 0.05 cc (plate 2) and 0.033 cc (plate 3), tested with *Staphylococcus* 19 (sensitive to 0.05 unit), 20 (sensitive to 0.04 unit) and 209 (sensitive to 0.02 unit). The serum contains more than 0.8 but less than 1.0 unit per cubic centimeter.

given later in this report, it was found that many of the strains tested had different degrees of sensitivity to penicillin and that this sensitivity of any individual strain remained constant. It was possible, therefore, by using simultaneously several strains of *staphylococcus* of different grades of sensitivity to penicillin to simplify the penicillin titration of body fluids. Three strains were selected for routine tests, the first (No. 19) being inhibited in 0.1 cc. by 0.05 unit of penicillin but not by 0.04 unit, the second (No. 20) being inhibited by 0.04 unit but not by 0.03 unit, and the third (209) being inhibited by 0.02 unit and not by 0.01 unit. When 0.1 cc. of the fluid to be tested is used in the plate and a separate inoculum of each of these three strains is streaked across the 2 by 5 cm. window, separate readings of 0.2, 0.4 or 0.5 unit per cubic centimeter are possible from a single plate. If a second plate using 0.1 cc. of a 1:1 dilution of the fluid is similarly inoculated, the readings are 0.4, 0.8 or 1.0 unit per cubic centimeter. Thus with only two plates, the ranges of 0.2 to 1.0 unit per cubic centimeter are possible, and for higher values an additional dilution would be necessary. Although, as will be noted later in table 3, strains of *Staphylococcus aureus* were available with a range

APPLICATION OF METHOD TO TESTING PENICILLIN SENSITIVITY OF BACTERIA

Variations in sensitivity of various strains of *Staphylococcus aureus* have been described by Rammelkamp and Maxon¹¹ and by Spink, Ferris and Vivino¹² while Dawson, Hobby and Lipman¹³ have shown that strains of nonhemolytic streptococci differ considerably in penicillin sensitivity. The method for penicillin assay described lends itself readily to the determination of penicillin sensitivity of various organisms, since such titration of sensitivity of stock strains is a necessary step in standardization of the method for assay of unknown fluids.

The procedure adopted for routine penicillin sensitivity titration is as follows:

A small amount of standardized penicillin powder is accurately weighed in a sterile weighing bottle and diluted with sterile isotonic solution of sodium chloride

11 Rammelkamp, C. H., and Maxon, T. Resistance of *Staphylococcus aureus* to the Action of Penicillin, *Proc Soc Exper Biol & Med* 51: 386 (Dec) 1942

12 Spink, W. W.; Ferris, V., and Vivino, J. J.: Comparative *In Vitro* Resistance of *Staphylococci* to Penicillin and to Sodium Sulfathiazole, *Proc. Soc. Exper Biol & Med* 56: 207 (March) 1944

13 Dawson, M. H.; Hobby, G. L., and Lipman, M. O.: Penicillin Sensitivity of Strains of Nonhemolytic Streptococci Isolated from Cases of Subacute Bacterial Endocarditis, *Proc Soc Exper Biol & Med* 56: 101 (June) 1944

so that the solution contains 100 units of penicillin per cubic centimeter. A second dilution (1:50) is made to contain 2 units per cubic centimeter for use in the tests. Further dilutions are prepared according to the scheme shown in table 2. It will be noted that the dilutions are all made to a total volume of 10 cc., since it was felt that dilution errors were minimized by the use of a larger volume. For the tests 0.1 cc. of each dilution is spread over the 2 by 5 cm. window of an agar plate in the manner previously described and dried two to three hours in the ice box. Broth cultures of one to three separate strains may be inoculated on each plate if each culture is spread in a separate channel. After incubation, complete inhibition of growth in each strain will be found with a certain fractional unit of penicillin, but the next lower dilution with 0.01 unit less will show no inhibition. The smallest amount of penicillin producing inhibition has been considered the titer of peni-

Small amounts of standard penicillin calcium may be obtained from the Food and Drug Administration in Washington, D. C., sufficient for a moderate number of assays. It is advisable to prepare one's own standard from other penicillin sodium which may be available and which can be standardized by use of the penicillin calcium.

Penicillin sodium is more hygroscopic than the calcium salt, and the standard prepared must be kept free from moisture. An accurate analytical balance must be used, and the original dilution should be carried out with certified pipets.

SENSITIVITY OF STAPHYLOCOCCUS AUREUS TO PENICILLIN

In table 3 are shown the results of tests for penicillin sensitivity in 30 strains of *Staphylococcus aureus*. These include the 2 stock strains Oxford H and 209P, together with 28 strains isolated from various human sources, 12 from infections in adults and the remaining 16 from children. The mannite fermentation and coagulase test on each strain is also given. There was a definite variation in sensitivity of the various strains since 20 were completely inhibited by less than 0.1 unit, 7 required 0.1 unit and 3 more than 0.1 unit, the most resistant needing 0.4 unit. Many of the patients from whom the organisms were isolated were treated with penicillin, but from a careful review of their records no conclusion was possible regarding the relation of the sensitivity of the organism to the clinical effect of penicillin therapy. Only 6 of the 30 strains fermented mannite, while 21 were coagulase positive.

The fact that some strains of *Staphylococcus aureus* are inhibited only by a concentration of penicillin five to ten times as great as required for other strains may be related to the lack of clinical response to penicillin therapy in certain infections by the more resistant strains.

SENSITIVITY OF MENINGOCOCCI TO PENICILLIN

Seven strains of meningococci grown from the spinal fluid of infants and children with acute meningitis were tested. None of the patients were treated with penicillin, and all recovered with sulfonamide drug therapy.

The organisms had been grown on blood agar from two weeks to two months before the tests, and blood agar and serum agar were used in the titrations, which were repeated several times on each strain. In table 4 are shown the results of from three to eight penicillin titrations on different occasions with these organisms together with *Staphylococcus aureus* (209) as a control. The titers of the separate strains showed only minor variations on successive tests. This was considered to be due to differences in the mediums used on different occasions. There was a striking difference in the sensitivity to penicillin in the different strains, since some were inhibited by 0.04 to 0.05 unit, while two required 0.1 unit and two others 0.3 unit. In units of penicillin per cubic centimeter this variation would range from 0.4 to 30 units. The standard test strain of *Staphylococcus aureus* (209P) is apparently slightly less sensitive to penicillin on blood agar than on plain agar,

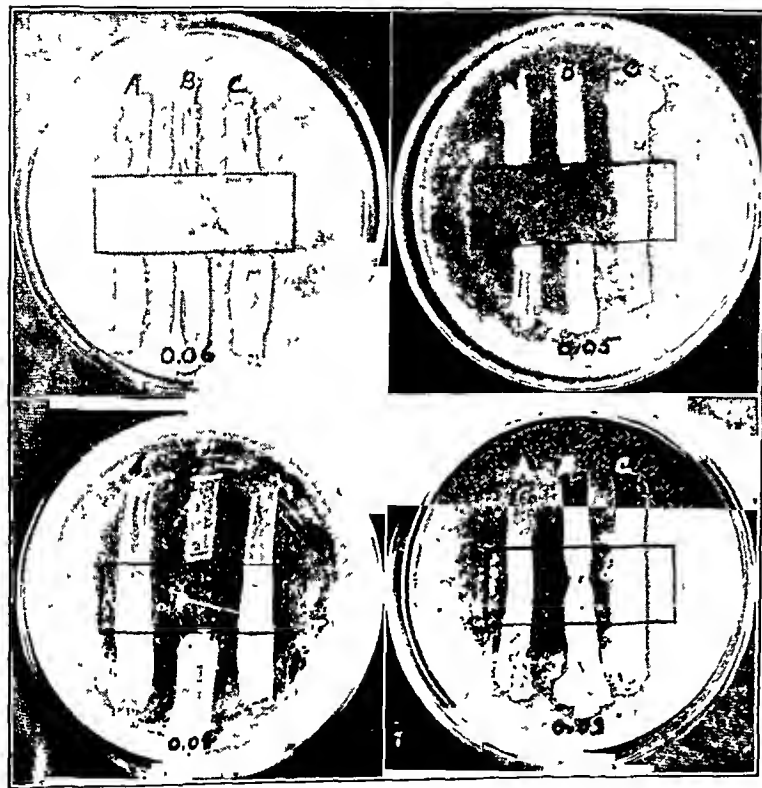


Fig. 3—Penicillin sensitivity titration with three strains of *Staphylococcus aureus*. Strain C is sensitive to 0.06 unit of penicillin, strain A to 0.05 unit and strain B to 0.04 unit.

cillin sensitivity. In figure 3 are shown four plates used in such a titration with three strains of *Staphylococcus aureus*. These "windows" of these plates had successively 0.06, 0.05, 0.04 and 0.03 unit of penicillin, and it will be noted that all strains were inhibited by 0.06 unit (plate 1), while with 0.05 unit (plate 2) strains A and B were inhibited but not strain C; with 0.04 unit (plate 3) only strain B was inhibited, and with 0.03 unit (plate 4) none were inhibited. The penicillin sensitivity of these strains would be considered 0.06 unit (C), 0.05 unit (A) and 0.04 unit (B) respectively. Actually these were strains 8, 19 and 20, shown later in table 3. The sharp end point between complete inhibition of growth and lack of inhibition with 0.01 unit less of penicillin is well shown in the titration (fig. 3).

For those who have not had experience with using standard penicillin, certain suggestions may be of value

since 0.03 unit was required on the former as against the usual titer of 0.02 unit on the latter.

The fact that some strains of meningococci are definitely resistant to penicillin offers an explanation of the recent report by Meads, Harris, Samper and Finland,¹⁴ who found 5 patients with meningococcic meningitis clinically resistant to penicillin therapy. They also found differences in penicillin sensitivity in four strains of meningococci tested.

TABLE 3.—Sensitivity of Various Strains of *Staphylococcus Aureus* to Penicillin

Strain No.	Source	Mannite Fermentation	Coagulase	Penicillin Sensitivity, Units
1*	Ulceration, skin.....	—	+++	0.1
2	Abscess, brain.....	—	++++	0.1
3	Pericarditis, pyemia.....	—	++++	0.06
4	Cellulitis, face.....	—	+++	0.03
5*	Sinus, skin.....	+	—	0.3
6	Osteomyelitis, sinus.....	+	++++	0.06
7	Osteomyelitis, sinus.....	—	++	0.07
8	Bulla, skin.....	—	++++	0.06
9*	Cellulitis, foot.....	—	++++	0.1
10*	Pus, furuncle.....	—	+++	0.03
11	Abscess, chest wall.....	—	—	0.07
12	Peritonitis, acute.....	—	++++	0.09
13*	Osteomyelitis, sinus.....	—	—	0.1
14*	Ulceration, skin.....	—	—	0.03
15*	Deep infection, foot.....	—	—	0.1
16	Pus, carbuncle.....	+	++++	0.06
17*	Osteomyelitis, sinus.....	+	+++	0.03
18*	Osteomyelitis, sinus.....	—	++++	0.09
19*	Osteomyelitis, sinus.....	—	—	0.05
20	Abscess, perineum.....	+	—	0.04
21*	Osteomyelitis, sinus.....	—	+++	0.1
22	Meningitis, acute.....	—	++++	0.1
23	Osteomyelitis, acute.....	—	++++	0.09
24	Pus, skin abscess.....	—	+++	0.2
25	Pus, abscess, buttock.....	—	+++	0.06
26	Pus, abscess, umbilicus.....	—	++++	0.03
27	Blood, pyemia.....	—	—	0.4
28*	Joint abscess, sepsis.....	—	++++	0.07
29	Oxford "H" stock strain.....	—	—	0.02
30	209P stock strain.....	+	+++	0.02

* Adults.

TABLE 4.—Sensitivity of Meningococcus Strains to Penicillin

Meningococcus	1	0.05	0.04	0.03	0.03	0.04	0.04	0.04	0.05
2	0.05	0.04	0.04	0.03	0.03	0.04	0.05	0.04	0.05
3	0.1	0.09	0.09	0.1					
4	0.1	0.1	0.1	0.1					
5	0.3	0.3	0.3	0.3					
6	0.03	0.07	0.03	0.03					
7	0.3	0.3	0.3						
Staph. aureus 209	0.03	0.03	0.03	0.03					

SUMMARY

Tests on various strains of *Staphylococcus aureus* and meningococci by a method for assay of penicillin in body fluids have shown a considerable variation in penicillin sensitivity.

500 South Kingshighway, St. Louis 10.

14. Meads, M.; Harris, H. W.; Samper, B. A., and Finland, Maxwell: Treatment of Meningococcal Meningitis with Penicillin, *New England J. Med.* 231: 509 (Oct. 12) 1944.

First English Surgeon.—John of Arderne (1307-1380) is the first English surgeon. Several of his manuscripts have been preserved and reprinted with a translation into modern English. One of these is on fistula in ano. He saw war service during the Hundred Years War. He practiced in London and in Newark. His practice was among the nobility and his fees were enormous; tradition says that sometimes his fees consisted of ransoms for knights who were held by the Turks after the Crusades. Since he took the ransom, the knights never got home. Possibly he is the model for Chaucer's Doctor of Physic.—Clendening, Logan: *Source Book of Medical History*, New York, Paul B. Hoeber, Inc., 1942.

PRESENT STATUS OF CHRONIC REGIONAL OR CICATRIZING ENTERITIS

H. L. BOCKUS, M.D.

PHILADELPHIA

Consummative treatment of any disease comprises the destruction of the causative agent and/or the complete removal of the resultant lesion when one exists. Obviously this situation does not maintain in chronic regional enteritis. A definitive etiologic factor has not been discovered and often the entire lesion, particularly in the mesentery, cannot be removed with safety. Furthermore, after wide surgical excision of the diseased segment of intestine and its mesentery recurrences frequently take place. Sufficient experience has accrued since the epochal contribution of Crohn, Ginzburg and Oppenheimer¹ in 1932 to justify an appraisal of the present state of our knowledge of this interesting and not too rare lesion of the intestine.

NONCONTROVERSIAL ASPECTS OF CHRONIC ENTERITIS

It is not difficult to prepare a ledger epitomizing our present knowledge of this disease and the degree of success which has been had in the management of it. There is general agreement concerning the following: (1) The gross morphologic character and histologic architecture of the advanced lesion is well understood; (2) it is the most common chronic severe inflammatory lesion which primarily affects the mesenteric small intestine of persons in the United States; (3) its clinical manifestations are protean, yet if the possibility of the disease is considered the diagnosis is usually not difficult, and (4) good immediate results are usually obtained either by resection of the lesion or by a short-circuiting anastomosis with transection of the bowel proximal to the lesion. Operation can be accomplished with a relatively low mortality.

I do not propose to discuss those aspects of chronic cicatrizing enteritis about which there is general agreement except to comment briefly on its incidence and its diagnosis.

Incidence.—Approximately 160 papers dealing with chronic regional enteritis are listed in the *Cumulative Index* during the years 1939 to 1943 inclusive. A further idea of the incidence of the lesion may be obtained when it is realized that Shapiro² in reviewing the literature in August 1939 tabulated 519 cases of regional enteritis occurring in patients on whom operative procedures had been performed.

In the Western Hemisphere climate seems to play a role in the incidence of regional enteritis. The disease is rare in the southern sections of the United States and in Central America and the coastal regions of the northern part of South America. Race does not seem to confer an immunity, although relatively few cases have been reported in Negroes. The sex incidence is not significant. Chronic regional enteritis may occur at any age from early childhood to late life, but the average age is somewhat less than 30 years.

From the Graduate Hospital of the University of Pennsylvania Read before the joint meeting of the Section on Surgery, General and Abdominal, and the Section on Gastro-Enterology and Proctology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

Crohn, B. B.; Ginzburg, L., and Oppenheimer, G. D.: Regional Ileitis, *J. A. M. A.* 99: 1323 (Oct. 15) 1932.

2. Shapiro, R.: Regional Ileitis: A Summary of the Literature, *Am. J. M. Sc.* 198: 269 (Aug.) 1939.

Clinical Manifestations.—Although the subjective and objective features of regional enteritis parallel to some extent the site and extent of the disease and the presence or absence of complications, the possibility of the existence of the disease must be considered in the presence of multifarious symptoms and signs. The duration of symptoms in my patients with ileitis and ileocolitis subjected to operation (19 cases) varied from three months to six years. The average was twenty-nine months.

Symptoms and Signs Suggestive of Acute or Subacute Appendicitis: Although usually antecedent symptoms of pain, diarrhea or distention have been present in those patients with chronic regional enteritis presenting a clinical picture suggestive of acute appendicitis, not rarely these phenomena have been insufficient to attract attention. Ofttimes operation is performed because of the acute onset of symptoms without resort to roentgen studies, so that the diagnosis is first made on opening the abdomen.

Persistence or Recurrence of Symptoms Following Appendectomy: Under these circumstances the occurrence of clinical features such as lower abdominal pain, distention and diarrhea should cause one to entertain the provisional diagnosis of regional enteritis. This disease should be foremost in the mind of the clinician if an external fistula appears following appendectomy.

Chronic Abdominal Abscess: Symptoms or signs suggestive of a chronic abscess in the pelvis or lower abdomen, particularly the lower right abdominal quadrant, constitute the principal clinical phenomena of an occasional patient with cicatrizing enteritis. Pelvic inflammatory disease or disease of the bladder is suspected as the primary diagnosis in some instances.³

Multiple Perianal Fistulas or Abscesses: Such lesions occurring in patients having diarrhea, abdominal distention, vague lower abdominal pain or unexplained fever should arouse suspicion. Indeed, 8 patients in a series of 114 (7 per cent) with regional enteritis reviewed by Jackman and Smith⁴ sought medical aid primarily because of anal fistulas.

Diarrhea: Chronic or intermittent diarrhea in association with abdominal pain of the peristaltic type constitutes the major clinical syndrome in many patients with regional enteritis. The symptoms may simulate those of ulcerative colitis, although the temporary relief afforded by a bowel movement, the tenesmus and the presence in the stools of recognizable blood and pus (commonly present in ulcerative colitis) is usually lacking in enteritis.

Abdominal Pain: Dull to moderately severe pain (often located in the lower right abdominal quadrant) of a chronic, intermittent character if associated with either diarrhea, borborygmus or abdominal distention, a palpable mass or low grade fever should cause one to exclude the presence of regional ileitis.

Intestinal Obstruction: Symptoms of chronic, recurrent or acute intestinal obstruction may be caused by regional enteritis. Usually a carefully taken history will disclose the antecedence of diarrhea, peristaltic abdominal pain and borborygmus. Nutritional edema may accompany obstructing enteritis, and the extensive retention of fluid in the tissues and body cavities may be the most impressive feature of the clinical picture.⁵

Rare Manifestations: Rarely the patient with regional enteritis may seek treatment because of peritonitis induced by free or walled off perforation or melena⁶ or chronic fever of undetermined origin⁷ or symptoms and signs suggestive of abdominal carcinoma in the aged.⁸ In some cases the palpation of an ill defined mass may represent the first finding of consequence. The clinical manifestations of regional enteritis may be indistinguishable from those of intestinal neoplasms, granulomas, intestinal tuberculosis and lymphomatous lesions, although a positive diagnosis of enteritis based on clinical signs and roentgen study usually proves correct. In rare instances regional enteritis has simulated chronic intussusception, twisted ovarian pedicle, postoperative adhesions, pelvic tumors and cysts and diseases of Meckel's diverticulum.⁹ Regional enteritis is discovered occasionally in the absence of any symptoms.⁹

Roentgen Findings: Expertly performed barium meal study of the small intestine together with a barium enema will usually cause one to suspect chronic regional enteritis if it is present. The roentgen characteristics of the disease have been adequately described. Except in patients with definite obstruction or those with symptoms simulating acute appendicitis or peritoneal irritation requiring immediate exploration, operation is not justifiable in the absence of evidence of a roentgen abnormality. In the presence of a chronic cicatrizing lesion, if the roentgen investigation is negative, the examination has usually been inadequate or the interpretation in error. A lesion incapable of showing some type of roentgen defect of the intestine is hardly one which would require laparotomy.

CONTROVERSIAL FEATURES OF REGIONAL ENTERITIS

Let me now review those features of the disease concerning which differences of opinion still exist. The cause of chronic cicatrizing enteritis remains obscure and present methods of treatment are not entirely satisfactory.

Etiology of Chronic Cicatrizing Enteritis.—Neither the immediate cause nor the site of primary attack of the etiologic agent has been established.

Immediate Cause: There is nothing to suggest that a virus is causative. Because of the granulomatous character of the lesion, Rodaniche, Kirsner and Palmer¹⁰ applied the Frei intracutaneous tests to 4 patients with regional ileitis, using both mouse and human antigens, with negative results. These investigators quoted 9 other cases from the literature, which were similarly investigated, with negative results. The serums of the patients of Rodaniche and her collaborators¹⁰ were devoid of neutralizing antibodies against the virus of lymphogranuloma venereum. Attempts to isolate virus from resected intestine and lymph gland by animal inoculation proved unsuccessful.

5. Bockus, H. L.; Johnson, T. A., and Lee, W. E.: *An Appraisal of the Results of Surgically Treated Chronic Regional Ileitis*, in Frank Howard Lahey Birthday Volume, Springfield, Ill., Charles C Thomas, Publisher, 1940, pp. 53-83.

6. Fallis, L. S.: *Massive Intestinal Hemorrhage in Regional Enteritis*, *Am. J. Surg.* 53: 512 (Sept.) 1941. Yunich and Crohn.⁸

7. Bockus, H. L.: *Gastro-Enterology*, Philadelphia, W. B. Saunders Company, 1944, vol. 2, pp. 158-196.

8. Yunich, A. M., and Crohn, B. B.: *Atypical Regional Ileitis: Roentgenological Limitations*, *Am. J. Digest Dis.* 8: 185 (May) 1941.

9. Warren, R., and Miller, R. H.: *Regional Enteritis: Report of 9 Cases*, *New England J. Med.* 226: 589 (April 9) 1942.

10. Rodaniche, Enid C.; Kirsner, J. B., and Palmer, W. L.: *The Relationship Between Lymphogranuloma Venereum and Regional Enteritis*, *Gastroenterology* 1: 687 (July) 1943.

3. Ginzburg, L., and Garlock, J. H.: *Regional Ileitis*, *Ann. Surg.* 116: 906 (Dec.) 1942.

4. Jackman, R. J., and Smith, N. D.: *Some Manifestations of Regional Ileitis Observed Sigmoidoscopically*, *Surg., Gynec. & Obst.* 76: 444 (April) 1943.

No proof has been supplied to indicate that the inflammatory reaction in chronic regional enteritis is initiated by an animal parasite. Bacteria are usually held responsible by most observers for the primary attack. The tubercle bacillus has not been isolated from the lesions. Although viewed in an isolated manner the histologic character of the lymphatic involvement resembles tuberculosis, the tendency toward regression of the histologic lesions without scarring or caseation excludes the presence of active tuberculosis. Because of this character of the histologic lesion, Hadfield and others have commented on its simulation of sarcoidosis. However, up to this time no evidence has been added to suggest that regional enteritis is actually sarcoidosis.

Felsen¹¹ has reported the occurrence of chronic regional ileitis as sequelae of acute bacillary dysentery in 3 patients. He also observed 29 instances of acute terminal ileitis in association with bacillary dysentery and states that he has not seen acute terminal ileitis with mesenteric lymphadenitis in any disease other than bacillary dysentery. Bisgard and Henske¹² recovered a dysentery bacillus from the right kidney and a hemolytic streptococcus from the peritoneal fluid and a mesenteric gland of a child with regional ileitis.

Infections induced by food poisoning may possibly be responsible for the occurrence of chronic stenosing enteritis. A young woman (C. R.) recently studied at the Graduate Hospital dated the onset of her abdominal complaints from the eating of "spoiled" turkey which caused transient symptoms in 4 other persons. Previous exploration in another hospital revealed chronic stenosing enteritis involving 5 feet of the terminal ileum. The abdomen was closed without anything being done. Films one year later revealed the same extensive involvement (fig. 1). It is possible that the organism responsible for the food poisoning of this patient may have caused the primary inflammation of the intestine which eventuated in the advanced state of bowel disease. All evidence points toward bacterial invasion as a primary or exciting cause of chronic regional cicatrizing enteritis. It is likely that the process may be initiated by organisms having a predilection for lymphatic structures.

Predisposing Causes: There are no known predisposing causes of the disease. The personality pattern of many of my patients with chronic regional enteritis has aroused my interest. I have encountered very few calm, phlegmatic persons with this disease. Many of them were emotional, sensitive, rather excitable people. At least 4 of 19 patients could be classified as severely psychoneurotic, and 2 of them had been treated for a year or more prior to admission with the diagnosis of neurosis. The most prominent personality traits were anxiety and emotional immaturity. It has seemed to me that emotional immaturity is even more pronounced in patients with chronic regional enteritis than in those with chronic ulcerative colitis. One of the patients was admitted to an asylum for the insane within one year after resection of the terminal ileum with the diagnosis of dementia precox.

External violence or trauma may have been related to the onset of regional enteritis in a case reported by Morlock, Bagen and Pemberton.¹³ As predisposing

causes of cicatrizing enteritis there is nothing to suggest a primary nutritional defect, an endocrinologic disorder or allergy, although both nutritional deficiency states and allergy occur in association with the disease. Either condition may be responsible for the exacerbation of symptoms and perhaps for conditioning the chronicity of the lesion.

Site of the Primary Histologic Lesion: Regardless of whether the primary attack of the etiologic agent occurs by way of the intestine or by way of the blood stream, the lymphatic structures are unquestionably involved early and extensively. It has been shown by Hadfield¹⁴ and others that, before the stage of definite cellular infiltration of the tissues, the submucosa shows pronounced thickening due to lymphoid hyperplasia and obstructive lymphedema. Very early the lymph nodes exhibit the same changes. The extent of mucosal ulcer-



Fig. 1 (case C. R.).—Roentgenologic study by Dr. Arthur Finkelstein (Graduate Hospital) showing extensive involvement of the ileum with cicatrizing enteritis three and three-quarter hours after barium meal.

ation is not always proportionate to the involvement of the lymphatics. The experiments of Reichert and Mathes¹⁵ add support to the significance of lymphatic damage in this disease. Pathologic changes quite similar to those of regional ileitis were produced in the ileum of experimental animals by obstructing the mesenteric and submucosal lymphatics with sclerosing substances.

Some observers believe that mesenteric lymphadenitis¹⁶ may be the primary lesion in cases of regional ileitis. Holman's case may be cited in this connection. The terminal ileum and cecum of a child 6 years of age were removed for regional enteritis. The mucosa

11. Felsen, J.: The Relationship of Bacillary Dysentery to Distal Ileitis, Ulcerative Colitis and Nonspecific Granuloma, *Ann. Int. Med.* 10: 645 (Nov.) 1936.

12. Bisgard, J. W., and Henske, J. A.: Regional Ileitis (Crohn), *J. A. M. A.* 108: 350 (Feb. 13) 1937.

13. Morlock, C. G.; Bagen, J. A., and Pemberton, J. J.: Regional Enteritis Following Severe External Violence to the Abdomen, *Proc. Staff Meet., Mayo Clin.* 14: 631 (Oct. 4) 1939.

14. Hadfield, G.: The Primary Histologic Lesion of Regional Ileitis, *Lancet* 2: 773 (Oct. 7) 1939.

15. Reichert, F. L., and Mathes, M. E.: Experimental Lymphedema of the Intestinal Tract and Its Relation to Regional Cicatrizing Enteritis, *Ann. Surg.* 104: 601 (Oct.) 1936.

16. Holman, E., in discussion on Bell, H. G.: Chronic Cicatrizing Enteritis, *California & West. Med.* 41: 239 (Oct.) 1934.

of the ileum, the appendix and the colon were intact at every point, but the lesion in the ileum was characterized by an extensive diffuse edema involving also the mesentery and regional lymph nodes. It was inferred that the process was primarily lymphatic in origin and that ulceration of the mucosa in other cases of regional



Fig 2 (case J. C.)—Film exposed in May 1937 one hour after ingestion of barium. The small intestinal loops in the midabdomen are narrow and stringlike and retain very little barium. The more distal loops show some narrowing and pronounced abnormality of the mucosal pattern. The only loops found to be diseased at autopsy in 1943 were those in the midjejunum marked with arrows. The ileal loops, which appeared to be extensively involved in 1937, showed no evidence of disease in 1943.

enteritis may be secondary to obstruction and infection of the lymphatics. Surgeons have noted a diffuse inflammation of the terminal ileum in cases of primary lymphadenitis.¹⁷ Unfortunately the link between acute ileitis and chronic stenosing ileitis has not been proved. The literature still lacks evidence of adequately observed cases of acute terminal ileitis in which the typical stenosing, cicatrizing lesion subsequently developed.

Erskine¹⁸ examined 31 surgically removed appendices in which major involvement was of the outer coat and lymph structures. In 10 of these inflammation of the terminal ileum and regional mesenteric adenitis had been described by the operating surgeon. Pathologically a dilatation of the lymph sinuses of the appendix was noted. It was thought that primary damage of the regional lymph nodes had caused a consequent

damming back of normal drainage of the appendix and terminal ileum. Erskine ventured the thought that ileal involvement in chronic regional ileitis might depend on this back flow of infective agents from the mesenteric glands or that the septic content of the ileum, lacking proper drainage, set up the chronic inflammatory process. Incidentally lymph node cultures in 3 of his cases showed respectively hemolytic streptococci, colon bacilli and tubercle bacilli, yet in each instance the same histologic reaction was found in the wall of the appendix.

If the foregoing thesis is correct, the lesion which we know as nonspecific chronic regional enteritis could at times be induced by primary enteric or glandular tuberculosis. The primary tuberculous infection, although overcome, might leave in its wake permanent damage to the lymphatics with obstruction to drainage from the intestine, paving the way for the inroads of secondary infecting organisms. The following case is of interest in this connection:

In 1940 Bockus, Tumen and Kornblum¹⁹ reported that in November 1935 a boy aged 14 years showed roentgen evidence of a widespread cicatrizing stenosing enteritis involving a considerable portion of the jejunum and at least the upper half of the ileum. Tubercle bacilli were recovered from the feces on three separate occasions by Dr. F. Boerner during the course of the patient's first admission to the hospital. Acid fast organisms were never recovered subsequently. This boy was under our observation in and out of the hospital for a period



Fig 3 (case J. C.)—Mass of jejunal loops adherent to one another and connected in three areas by fistulas. One of the diseased loops is opened to show the extensive disease of the mucosa and thickening of the bowel wall. It would appear that the disease of the ileum had undergone regression.

of eight years until his death in December 1943. At postmortem examination only about 3 feet of jejunum was involved in the typical stenosing lesion of chronic regional enteritis. Pathologically there was nothing to suggest acid fast infection past

17. Rhoads, J. E.: Management of Regional Ileitis and Certain Other Ulcerative Lesions of Intestines, *Pennsylvania M. J.* 42:1050 (June) 1939.

18. Erskine, E. B.: The Pathologic Relationship of Mesenteric Adenitis, Ileitis and Appendicitis, *Am. J. Clin. Path.* 11:706 (Sept.) 1941.

19. Bockus, H. L.; Tumen, H., and Kornblum, K.: Diffuse Intestinal Tuberculous Enterocolitis, *Ann. Int. Med.* 12:1461 (Feb.) 1940.

or present. It is recognized that the finding of the tubercle bacillus on three occasions in the stools hardly warrants a diagnosis of primary enteric acid fast infection; nevertheless it justifies speculation concerning the significance of the tubercle bacillus in the initiation of the lesion. Another interesting feature at autopsy was the absence of any demonstrable evidence of involvement of the distal jejunum and proximal ileum. This entire segment of the bowel showed only atrophy of the bowel wall, undoubtedly due to long standing partial obstruction of the midjejunum. The mesentery of the distal jejunum and entire ileum was quite normal. Figure 2 illustrates the extensive involvement that was noted roentgenographically prior to April

extension of the disease, but also on the accumulation of experience with the various methods of therapy which have been tested. I should like to review my experience with patients who have undergone radical operative treatment (tables 1 and 2).

Chronic Terminal Cicatrizing Ileitis: Eleven patients with involvement varying in extent from 8 inches to 5 feet of terminal ileum were subjected to ileocolostomy (ileotransverse colostomy 10 cases, ileo-ascending colostomy 1 case) and resection in one or two stages, with one operative death, a mortality of 9 per cent. The

TABLE 1—Results of Operation in Chronic Regional Ileitis

Case	Sex	Race	Age	Duration of Symptom, Months	Site of Lesion	Operation	Time of Recurrence After Operation (Years)		Present Condition	Time After Operation, Years
							X Ray	Clinical		
D. V.	♀	Negro	33	12	Terminal ileitis 1 foot	Ileocolostomy, resection, 1 stage	—	—	Postoperative death, peritonitis	...
A. L.	♀	Jew	28	15	Terminal ileitis 1 foot	Ileocolostomy, resection, 2 stages	4	4	Fair	9½
F. B.	♀	Jew	41	72	Terminal ileitis 3 feet	Ileocolostomy, resection, 2 stages	1½	1½	Fair	7+
A. G.	♂	Jew	20	4	Terminal ileitis 1 foot	Ileocolostomy, resection, 2 stages	1½	?	Good	6¾
F. B.	♀	Italian	27	6	Terminal ileitis 8 inches	Ileocolostomy, resection, 1 stage	None 2 yr.	—	Good, 2 yr.	6+
A. R.	♂	Jew	34	12	Terminal ileitis 1 foot	Ileocolostomy, resection, 1 stage	7, 4 yr.	7, 4 yr.	Average (6 stools daily)	4+
R. S.	♀	Jew	36	3	Terminal ileitis 4 feet	Ileocolostomy, resection, 1 stage	None (3 yr.)	None (3 yr.)	Confined; schizophrasia	3
D. K.	♀	German	16	12	Terminal ileitis 4 feet; fistulas	Ileocolostomy, resection, 1 stage	No checkup	?	Fair	2
H. K.	♂	Jew	50	72	Terminal ileitis 1½ feet	Ileocolostomy, resection, 1 stage	1½ (2 feet)	1½	Fairly good	2+
R. M.	♀	Jew	35	43	Terminal ileitis 4 feet	Ileocolostomy, resection, 1 stage	2	1	Fair; obstruction and resection 1 foot ileum 2 years after first operation	3
R. G.	♀	Jew	41	72	Terminal ileitis 2 feet	Ileocolostomy, resection, 1 stage	None	None	Good	2
O. S.	♂	German	46	36	Regional ileitis (not terminal)	Resection, side to side anastomosis	3½	3½	Almost entire ileum and whole colon involved; clinical status fairly good	8
A. O.	♀	Italian	36	18	Regional ileitis (not terminal)	Resection, end to end anastomosis, 1 stage	1 yr. (?) no subsequent checkup	..	Good	5¾
D. R.	♂	Jew	29	12	Segmental ileitis 4 feet	Ileocolostomy, resection, 1 stage	10 mo.	Symptoms 9 mo	Fair	4
Chronic Ileocolitis										
B. S.	♂	Jew	18	18	Terminal ileitis proximal ¾ colon	Ileosigmoidostomy, resection, 2 stages	None	None	Good	8
M. S.	♀	Jew	32	20	Terminal ileitis 1 foot, proximal ¾ colon	Ileosigmoidostomy, ileum not transected	—	—	Postoperative death, fistula, peritonitis	...
M. C.	♀	Ordinary mixed American	23	24	Terminal ileitis 9 inches, proximal ½ colon	Ileosigmoidostomy, resection, 1 stage	—	—	Postoperative death; fistula, peritonitis	..
A. P.	♂	Jew	12	14	Terminal ileitis 1 foot, proximal ¼ colon	Ileocolostomy, 1 stage	None	None	Excellent	4
D. C.	♀	Ordinary mixed American	25	24	Terminal ileitis 1 foot, proximal ¾ colon	Ileosigmoidostomy, resection, 1 stage	—	—	Postoperative sigmoidal fistula, peritonitis, death (4 yr.)	...

1941. The absence of postmortem changes except in the jejunum suggested that a number of feet of ileum, formerly diseased, underwent regression with return to normal (fig. 3).

Both pathologic and clinical observations suggest that in many cases of regional enteritis the primary lesion is in the lymphatic structures and that no specific organism can be held responsible for the disease. One must conclude that the lymphatics often bear the brunt of the attack and that extension via the mesentery undoubtedly occurs.

Surgical Treatment.—A decision concerning the type of treatment to be instituted for the patient with chronic regional enteritis depends, not only on what is known of the etiology and pathology and manner of

remaining 10 patients are alive. Five of them are known to have a recurrence of the stenotic process proved by roentgen study (50 per cent). X-ray evidence of recurrence of the disease was obtained at intervals varying between one and one-half and four years following resection. One of the patients with recurrence is in good condition. The remainder are in fair shape, carrying on part time activities. A good result was obtained in only 45 per cent of 11 patients subjected to resection.

Regional (Not Terminal) Ileitis: Three patients were subjected to operation. In 2 instances resection with anastomosis of normal ileum was performed and in 1, an extensive case of segmental ileitis, approximately 5 feet of the terminal ileum together with the ascending colon were resected and an ileotransverse

colostomy performed. A recurrence of the disease has been detected by x-ray in all 3 patients at intervals varying from one to three and one-half years after resection. All of these patients are able to carry on part time activity without great discomfort.

All Cases of Ileitis (Terminal and Regional): Summarizing the data from both groups just cited, 14 patients were subjected to resection with one operative death (7 per cent). The 13 remaining patients are alive, but recurrences have developed in 8 of them, or 62 per cent.

It should be stated that in 3 of the 14 patients operation was absolutely essential because of almost complete obstruction in 2 instances and extensive infection associated with multiple fistulas in the third patient. All 3 patients are alive. Totally satisfactory results have been obtained in only 5 of 14, or 36 per cent of patients subjected to resection.

Ileocolitis: Five patients were operated on. In 4 instances the terminal ileum was involved and more than three fourths of the proximal colon. The terminal ileum and one third of the proximal colon were involved in the fifth patient. In 4 of the 5 patients the colonic involvement extended to the region of the junction of the descending colon with the sigmoid. In 1 instance

TABLE 2.—Radical Resection, Chronic Regional Ileitis and Ileocolitis

	No. of Cases	Operative Mortality, per Cent	Alive, No. of Patients	Recurrence, No. of Patients	Good Result, per Cent
.....	11	9	10	5	45
.....	3	0	3	3	0
.....	6	40	2	1 subsequent death	40
Total cases.....	10	10	15	9	37

death occurred after the primary ileosigmoidostomy, which unfortunately was performed without transection of the ileum. In the remaining 4 patients ileosigmoidostomy and resection of the ileum and colon proximal to the anastomosis were carried out. In 1 it was performed in two stages, and in the remaining 3 a one stage procedure was used. An operative mortality occurred in 2 of the 5 cases (40 per cent), the second mortality following a one stage resection. Three patients survived operation, but 1 died three and three-quarter years later as a result of multiple external fistulas and peritonitis. The remaining 2 patients are in good health, four and eight years following the operation.

• Adding our experience with ileitis to that of ileitis combined with colitis, 19 patients were subjected to operation and good results were obtained in 7, or 37 per cent. Four of the patients have died, a mortality of 21 per cent.

Resection Compared with Other Therapeutic Procedures: If one should attempt to compare these results with those to be anticipated if medical management had been substituted for operation, one could conclude that 3 of the patients would have succumbed without resort to operation as compared with the death of 4 patients following operation. In 7 others it is unlikely that more favorable results would have obtained with conservative management in view of the extent of involvement and the presence of fistulas and other abnormalities. Consequently by any criteria 10 of the 19 patients would certainly have been no better off. This leaves 9 patients in whom the results to be anticipated by conservative management cannot be estimated.

It is doubtful if all 9 patients would have remained as well as 7 of them have been, following resection of the lesion. In order to decide this question of the advisability of radical operation versus conservative management in the absence of complications, one should know whether or not this chronic granulomatous process in the intestine and the extensive disease of the mesentery ever recede during the course of adequate medical management. It is possible in some instances that recession of the lesion may occur (see case J. C.), but experience with the disease up to this time would suggest that complete resolution rarely takes place.

In view of the experience with radical operation cited, one is tempted either to treat some patients conservatively, as suggested by Cutler,²⁰ or to abandon resection with ileocolostomy for some other more conservative surgical procedure. The experience cited by Marshall²¹ at the Lahey Clinic justifies a careful appraisal of the Mikulicz type of resection in the treatment of the terminal type of chronic regional enteritis. This operation was performed thirty-five times at the Lahey Clinic with only one death, which was attributed to embolism. Recurrences were reported in only 9.6 per cent of the cases. Twenty-one had been followed for a period of four years or longer. These results are certainly superior to those obtained in my series of cases with resection and internal anastomosis.

In 1939 Shapiro² surveyed the results obtained by short-circuiting operations performed one year or more prior to the time of his report on 88 patients with regional ileitis. The mortality in this series was 8 per cent, but the incidence of freedom from symptoms was only 30.6 per cent in spite of the relatively short period of follow-up observation. Perhaps some of the bad results in these cases were due to the lack of transection of the ileum distal to the anastomosis, since it was impossible to learn from the case reports how often this necessary procedure was carried out. Only 14 of 45 patients in the report by Brown and Donald²² remained well after short-circuiting operations. However, more recently Ginzburg and Garlock³ and others have looked with favor on a short-circuiting anastomosis with exclusion in preference to resection of the lesion. Ginzburg and Garlock performed this operation fifty-four times without an operative death and with only two subsequent deaths. They report only seven failures in the 54 patients so treated. If a longer period of observation confirms these excellent results it would appear that short-circuiting operation with exclusion is preferable to resection with internal anastomosis.

Perhaps one should refrain from operating on some patients with regional enteritis in the absence of extensive infection or obstruction in order to determine whether or not the infective process will subside and some degree of resolution occur, as it does occasionally in chronic ulcerative colitis. Patient C. R., previously cited, in whom the extensive involvement rendered resection or short-circuiting operation unwise, has remained well following discharge from the hospital (six months). The advisability of trying conservative management in selected cases is suggested by the experience which has accrued in the follow-up management of extensive recurrences following resection. Some of these patients remain quite comfortable and well nour-

20. Cutler, E. C.: A Neglected Entity in Abdominal Pain and a Common Disease—Cicatrizating Enteritis, *New York State J. Med.* 29: 224 (Feb. 15) 1939.

21. Marshall, S. F.: Regional Ileitis; Surgical Management and Results of Operation, *S. Clin. North America* 22: 873 (June) 1943.

22. Brown, P. W., and Donald, C. J. J.: Prognosis of Regional Enteritis, *Am. J. Digest Dis.* 9: 87 (March) 1942.

ished with adequate care in spite of pronounced involvement of the intestine and mesentery. Furthermore, in the preoperative preparation of our patients many were rendered symptom free and afebrile prior to operation as a result of intensive medical management. Quite often the fever subsides, diarrhea is controlled and weight gain is achieved in a relatively short time.

Medical Management.—Adequate medical care of this disease should be thoroughly understood, since it must be carried out prior to any contemplated operation, following all types of surgical procedures and in the treatment of recurrences following operation. Furthermore, in some instances the involvement is so extensive that operative procedures cannot be undertaken.

The features of the disease which often require special therapeutic attention include severe infection, undernutrition, protein deficiency, hypochromic anemia, vitamin deficiencies of all kinds and steatorrhea. Less often calcium deficiency and hepatic dysfunction must be combated. A brief discussion of medical therapy follows:

Diet: A high protein, high carbohydrate diet is indicated. Ample proteins are essential in order to prevent or to overcome a tendency toward protein deficiency. Often the great bulk of calories must be supplied in the form of carbohydrates because of faulty absorption of fats in patients with very extensive involvement. The amount of fat permitted in the diet must depend on the presence or absence of steatorrhea. An excessive excretion of fat in the stools should be prevented, since steatorrhea is usually associated with abdominal distention and discomfort and an increase in the number of bowel movements. The tolerance to ingestion of fiber varies. If the diarrhea is pronounced or partial intestinal obstruction is present the diet should be bland and contain very little cellulose fiber. During the less active phase of the disease many patients tolerate a normal amount of cooked fiber, and in some instances even uncooked fiber is well borne. Just as in ulcerative colitis, sensitivity to certain foods may develop. Intolerance to milk may be noted in some patients during the active phase of the disease and in others with very extensive involvement.

Vitamins: It is essential to reinforce the diet with large amounts of easily absorbed vitamins in order to prevent the occurrence of multiple vitamin deficiency and to maintain good resistance and nutrition. Usually the water soluble vitamins can be given in large doses by mouth. It is doubtful whether complete reliance can be placed on synthetic preparations. Brewers' yeast or some similar natural whole vitamin B preparation has seemed necessary in several of my patients. During that phase of the disease characterized by infection, fever and pronounced diarrhea, water soluble vitamins should be administered parenterally. Very often parenteral water, glucose and salt are required and water soluble vitamins may be added to the intravenous solutions. Vitamin K may be administered intravenously or by injection if the need is great. Adequate amounts of the fat soluble vitamins are usually well borne when administered orally.

The Treatment of Anemia and Protein Deficiency: Severe anemia in regional enteritis is almost always associated with plasma protein deficiency, so that blood transfusions are required until the blood count approximates that of normal. Not infrequently a deficit in plasma protein persists, requiring infusions of blood plasma or amino acid mixtures. It may be very difficult

to maintain a normal plasma albumin concentration in these patients with extensive involvement or continuous fever. In addition to the high protein diet readily utilizable, amino acid mixtures may be required.

In patients with lesser grades of anemia, ferrous sulfate may be administered orally. Injections of crude liver extract may have some value in improving the general status of nutrition.

Calcium deficiencies are occasionally encountered, particularly in those patients who have had an associated steatorrhea. Calcium lactate or gluconate may be given by mouth or parenterally when required.

Ultraviolet Irradiation: Ultraviolet therapy is too often neglected in both regional enteritis and ulcerative colitis. It is difficult to assay its value, but empirically I believe that it has a definite place in the adequately arranged therapeutic regimen for patients who are hospitalized with regional enteritis.

Roentgen Therapy: The use of x-ray therapy has been mentioned by Cutler²⁰ and by Warren and Miller,⁹ but too little experience has been had to warrant an opinion concerning its value. It would be of interest to subject a number of patients with recurrences or with inoperable lesions to x-ray therapy, although it is unlikely that it will prove of much benefit.

Sulfonamides: The sulfonamides have been tried by a number of clinicians in the treatment of this disease. I have utilized sulfadiazine and sulfathiazole with good results in critically ill febrile patients in preparation for operation. The temperature has quickly dropped to normal in some instances. Succinylsulfathiazole is now being used for one week or more during the course of preparation for operation. The drug may be tried for the treatment of recurrences following operation and in the treatment of patients for whom operation is not being contemplated. At least temporary improvement may be anticipated as a result of the use of succinylsulfathiazole in some instances. It is too early to appraise its final effect on the disease.

Penicillin: Penicillin may be tried in much the same way in which succinylsulfathiazole is now being used. However, it is not likely to prove of value in the treatment of lesions of the gastrointestinal tract when administered parenterally as at present. Obviously neither sulfonamides nor penicillin can be expected to influence the irreparable pathologic changes which occur in many instances.

Vaccines and Serums: Vaccines and serums have not been evaluated in a sufficient number of cases to justify an opinion. It is unlikely that they will prove any more successful than in the treatment of chronic ulcerative colitis.

Palliative Treatment: It is rarely necessary to prescribe opiates to control either pain or diarrhea. Usually the more acute symptoms not due to peritoneal irritation or obstruction are controlled by bed rest and the exhibition of antispasmodics with small doses of phenobarbital.

Digestants: If it becomes difficult to maintain normal nutrition because of diarrhea out of proportion to the extent of disease, a gastric analysis should be performed in order to eliminate the possibility of achlorhydria. If achlorhydria is found the administration of dilute hydrochloric acid may reduce the number of stools. If because of extensive resection or recurrence after operation or involvement of a large part of the intestine the loss of protein and fat in the feces is excessive, large doses of pancreatic substance may be given before and after meals.

Prognosis.—It is apparent that with the use of all known methods of therapy chronic regional enteritis is frequently not overcome. The prognosis in any given instance must always remain in doubt, not for one or two years, but for many years. Not infrequently recurrences take place following resection in spite of the removal of every visible evidence of the lesion. It is probable that, with longer and more adequate follow-up studies, one may not anticipate permanent good results in more than 50 per cent of patients treated by resection of the lesion. However, there is some indication that regression of the disease may follow conservative medical management (case J. C.) or short-circuiting operation with exclusion.³ Certainly clinical remissions do occur, and some patients with extensive involvement of many feet of the small intestine enjoy good health for rather long periods of time. For this reason one should maintain an optimistic point of view concerning the outcome and possibility of improvement in every patient. Even though operation is deemed impossible, adequate medical management should be continued indefinitely, as clinical improvement in some patients may be nothing less than remarkable, following a relatively short period of hospitalization and thoroughly adequate management.

250 South Eighteenth Street.

INFLAMMATORY LESIONS OF THE SMALL INTESTINE

SURGICAL ASPECTS

HENRY W. CAVE, M.D.

NEW YORK

The surgical approach to inflammatory lesions of the small intestine is predicated on the type of involvement. Basically there are two types: (1) primary involvement, as is seen in cases of regional enteritis, and (2) secondary inflammatory lesions, as not infrequently follow obstruction of the small intestine or mesenteric thrombosis.

Of necessity, this discussion of the surgical aspects of inflammatory lesions of the small intestine will deal principally with regional enteritis which has involved the small bowel alone, and also with inflammation of the terminal ileum which is associated with ulcerative colitis. Mention will be made of 2 instances, from our surgical service, of chronic organizing enteritis, which aptly, I believe, should come under this general topic.

The most interesting of all primary lesions of the jejunum and ileum is the so-called terminal ileitis, regional enteritis or segmental enteritis, as has been so vividly and completely described by Crohn, Ginzburg and Oppenheimer¹ of the Mount Sinai Hospital in New York. Certainly a tribute should be paid to this group of investigators and surgeons of this particular institution for the outstanding work that has been done by them and under their direction in this disease. From time to time complete reports on the various aspects both medical and surgical have emanated from this clinic. Our experiences at the Roosevelt Hospital has

been limited as to numbers, and in that respect are not comparable to the series of the Mount Sinai Hospital.

In all there were 23 cases of regional enteritis in the surgical services of our hospital during the past ten years. Of the 23 patients operated on, 19 were males. Seven were operated on with a preoperative diagnosis of acute appendicitis and, of the 7, five appendectomies were performed. Four had been previously operated on and resections of the terminal ileum and ascending colon carried out. These 4 cases could be called possible recurrences because of the fact that they all recurred near the site of the previous anastomosis. In one, a man of 25, admitted with a fecal fistula, who had previously had a resection of the small bowel and ascending colon, the condition necessitated further excision of the small intestine, to the extent that only approximately 3 feet of small bowel remained. There were 6 instances in our series in which there was an inflammatory involvement at the terminal ileum associated with ulcerative colitis.

All of these necessitated wide resection of the ileum as well as a good portion of the large bowel. One could term this group as right sided ulcerative colitis with terminal ileitis.

Of the 23 patients in this series, 3 died. One was a man of 34 who was admitted to the hospital with a diagnosis of perforated peptic ulcer. At operation a perforation of the ileum was sutured. He was thought too ill to carry out other procedures. Autopsy revealed acute general fibrinopurulent peritonitis and terminal ileitis with perforation. The second patient was a youth of 19 who had had elsewhere a resection of the terminal ileum and an ileosigmoidostomy. Ileocolostomy and partial colectomy were performed. Four months after the second operation an obstruction developed. The ileum perforated and death from peritonitis ensued. The third patient who died was a woman of 22 who had been given an ileostomy and later subtotal colectomy. Two years later she died from a perforation in the terminal ileum which postmortem examination revealed to be a perforation 8 inches from the ileal stoma in a segment of bowel which had all the characteristics of regional enteritis.

It is the early stage of this disease that has so frequently been confused with acute appendicitis, there being pain in the right lower quadrant of the abdomen, direct and rebound tenderness at McBurney's point, fever and leukocytosis. In 4 instances in my own private practice, all before 1938, the diagnosis of acute appendicitis was made and the abdomen opened through a McBurney incision, revealing abundant serosanguinous fluid, the terminal ileum reddened and edematous and the appendix normal. The appendixes in all 4 instances were removed, a questionable practice, the muscle splitting incision was closed through a right rectus incision, and an exploration was carried out showing the extent of the ileitis and especially the inflammatory involvement of the mesentery. No further procedure was done; the abdomen was closed. All in this particular group operated on over five years ago have failed to show any sign or symptom of a recurrence. One questions that many suffering from the acute phase of the disease necessarily go on into the ulcerative phase followed by stenosis and later fistulous formation.

From the surgical aspect the question of recurrences should be discussed. There are instances no doubt in which the disease recurs at or near the site of a previ-

From the Roosevelt Hospital.
Read before the joint meeting of the Section on Surgery, General and Abdominal, and the Section on Gastro-Enterology and Proctology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1945.
1. Crohn, B. B.; Ginzburg, L., and Oppenheimer, G. D.: Regional Ileitis: Pathologic and Clinical Entity, J. A. M. A. 99: 1323 (Oct. 15) 1932.

ous anastomosis; this means usually that resection has been incomplete and that potentially if not already inflamed bowel wall has been used in performing ileocolostomy. There may exist a segment or segments of the jejunum higher up that could be identified as an early lesion, had a careful search been made at the first operation.

It is generally conceded that the treatment of regional enteritis is surgical. Most surgeons advocate resection of the involved segment or segments either in one or in two stages. If the two stage method is followed the interval between first and second is variable, depending on the improvement of the patient.

In the presence of an internal or external fistulous tract, side tracking maneuvers either of the small bowel to small bowel or of the small bowel to the large bowel add considerably to a safer and a more satisfactory outcome.

Two and one-half years ago Colp, Garlock and Ginzburg² advocated ileocolostomy with exclusion for nonspecific ileitis, suggesting that it "is an indirect and simpler procedure" and "can be carried out with a negligible mortality by the surgeon who only rarely encounters the disease." They reported 40 cases without operative mortality or serious postoperative complications. Two days ago at this meeting of the American Medical Association before the Section on Surgery, General and Abdominal, Drs. Garlock and Crohn³ reported 164 cases followed for a period from two to fourteen years with a low operative mortality of 8.5 per cent. They reemphasize the importance of a single short-circuiting procedure with transection of the terminal ileum and are convinced that their results are better than with primary or secondary resection.

I am of the belief that many can be cured permanently by ileocolostomy with exclusion, especially those operated on in the early stages of the disease; others reaching the stage of ulceration, stenosis and fistulous formation will require further surgery before they are cured.

Certain individuals suffering from ulcerative colitis present involvement of the terminal ileum in varying degrees. We have considered this for the most part a continuation or spread of the disease backward through the ileocecal valve; however, in 7 of the 80 patients on whom we have operated primarily for ulcerative colitis, we found inflammatory lesions of the small intestine resembling regional enteritis.

Tuberculosis of the small intestine, especially at the ileocecal junction, may be a primary lesion; however, generally the lung is the primary seat. These have to be dealt with surgically; formerly it was thought that by merely opening the abdomen or instilling free oxygen into the peritoneal cavity cures were effected. Resection of the involved area has proved valueless unless heliotherapy or medical management will arrest the original focus.

Secondary inflammatory lesions following mechanical intestinal obstruction, volvulus or mesenteric thrombosis have their surgical implications. Infection is succeeded by embarrassment to the blood supply. Perforation with resulting peritonitis can be anticipated unless the gangrenous segment is removed. The Miller-Abbott tube, a valuable adjunct in intestinal surgery,

frequently has been misleading and has given a sense of false security in numbers of instances of acute ileus due to a band or torsion of a loop or loops of small bowel.

There is an unusual chronic inflammatory lesion which involves the entire small intestine which should be mentioned in this discussion. In 1908 Dr. Miles F. Porter and Dr. William H. Welch⁴ reported before the Section on Surgery, General and Abdominal, an unusual pathologic specimen. The specimen revealed the entire small intestine covered with a grayish white, strong membrane, cartilaginous in part, which covered up and closed into a small mass the entire small bowel. The fatality had resulted from intestinal obstruction due to this constricting, encircling membrane. Dr. Welch's pathologic diagnosis was "chronic organizing peritonitis from numerous transverse infoldings or constrictions of the intestinal wall, this being held in place by bridges of dense organizing false membrane."

Dr. Charles N. Dowd⁵ in 1923 reported from the Surgical Division of the Roosevelt Hospital a case in which a man aged 46 complained of pain and a mass in the lower part of the abdomen. He found at operation a lobulated irregular mass measuring 24 cm. in length and 10 cm. wide covered by a thickened membrane, the entire mass giving the appearance of having been the site of an inflammation. "It was found that the tumor was composed of convoluted and adherent small intestine bound into an irregular mass by some peculiar pathological process." An anastomosis was made around this mass between a loop of the jejunum and a segment of the terminal ileum. A leak occurred at the site of anastomosis. The patient died on the thirty-third postoperative day.

In January 1941 a 12 year old girl complaining of recurrent attacks of nausea and vomiting and dull epigastric pains was admitted to the Surgical Service of the Roosevelt Hospital. The child had a tumor in the left upper quadrant of the abdomen. X-ray examination revealed distended loops of jejunum in the left upper quadrant with a 50 per cent six hour gastric residue. At operation a fair sized tumor mass covered with a thick grayish membrane was found in the left upper quadrant. It was difficult to determine whether this mass was in the peritoneal cavity or in the retroperitoneal space. Except for 4 or 5 inches of the terminal ileum, almost the entire intestines were clustered together under this thickened membrane, and the loops were found to be adherent to one another. This thickened membrane, covering almost the entire small intestine like a cap, was dissected off, and the loops of small bowel were straightened out. The patient made an uneventful recovery. A follow-up in March 1944 revealed the abdomen to be entirely normal. Studies of the small intestine revealed nothing unusual.

This condition has been variously termed multiple progressive hyaloserositis and chronic multiple serositis. The etiology is unknown. The mucous membrane of the intestine in this condition becomes puckered into various shapes and various size folds and will completely obliterate the lumen of the bowel. The actual surgical removal of the encasing membrane is the only method of treatment through which recovery can be expected.

2 Colp, R., Garlock, J. and Ginzburg, L. Ileocolostomy with Exclusion for Nonspecific Ileitis, *Am. J. Digest. Dis.* 9:64 (Feb.) 1942.
3 Garlock, J. H. and Crohn, B. B. An Appraisal of the Results of Surgery in Treatment of Regional Ileitis, *J. A. M. A.*, to be published.

4 Porter, M. F. Chronic Peritonitis with Complete Obstruction, *Tr. Sec. Surg. & Anat.*, A. M. A., 1908, p. 202.

5 Dowd, C. N. The Relationship Between Certain Forms of Intestinal Obstruction, Chronic Peritonitis and Chronic Multiple Serositis, *Ann. Surg.* 77:423 (April) 1923.

SUMMARY

Numerous patients with early acute regional enteritis will recover without resection or even without ileocolostomy with exclusion. Appendectomy in the early stage or other stages invites disaster. In the surgical management of regional enteritis resection in one or two stages has been generally accepted as the procedure of choice. Colp, Garlock and Ginsburg believe that a sufficient number of patients can be cured by ileocolostomy with exclusion alone so that resection is unnecessary. Certainly their results with this procedure have been most encouraging. A certain percentage of patients suffering from ulcerative colitis have an associated ileitis. This diseased terminal ileum should be removed at the time of partial or complete colectomy.

A rare inflammatory lesion of the small intestine termed chronic organized enteritis was recently treated in the Surgical Service of the Roosevelt Hospital.

West Fifty-Ninth Street and Ninth Avenue.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. BOCKUS AND CAVE

DR. BERRILL B. CROHN, New York: The duration of illness before surgery was applied for was twenty-seven months. This delay is one of the reasons why, possibly, the surgical results have not been as promising as they should be and are to date disappointing. What happens during those twenty-seven months during which the disease passes without a diagnosis? Dr. Bockus mentions a febrile, an indeterminate protracted form of the disease. One of my first cases of ileitis was reported in the *New England Journal of Medicine* as a case of brucellosis with unusual manifestations of small intestine involvement, a case with continuous fever, in which the ileitis was not identified. More and more cases in which there is fever for months are diagnosed by competent medical men as rheumatic fever, periarteritis nodosa, Libman-Sachs disease or subacute bacterial endocarditis; often the diarrhea is not noted for many months. Once the clinical phenomenon of diarrhea has announced itself, the diagnosis of ileitis or of segmental colitis accounts for all the previous symptoms. There is apparently a long lag between the beginning of symptoms and the eventual diagnosis of inflammatory intestinal disease with recourse to surgery. The better results that can be shown and will be shown in the future with the surgical treatment of this disease will depend in great part on earlier diagnosis. Dr. Garlock and I reported a large group of cases of ileitis (65 cases) in which the surgical attack was ileotransverse colostomy with transection of the ileum; the mortality in this series was nil. In our experience the incidence of recurrences was 10 per cent. That is much better than has been shown by us in the past. The future will depend on the factors, namely the responsibility of the medical men for an earlier diagnosis during those twenty-seven months, and the ability of the surgeons to determine just what is the best and simplest surgical procedure, one with the least mortality and with the highest percentage of promising returns.

DR. MARIE ORTMAYER, Chicago: A woman aged 52 had been ill for nine months with what had been diagnosed duodenal ulcer and anemia. In the month before I saw her she had lost 20 pounds (9 Kg.). She complained of mild epigastric pain, not exactly related to eating, of vomiting with some relief from the pain, and of diarrhea of recent onset. Her previous history was negative except for pneumonia ten years before. She weighed 72 pounds (33 Kg.). Her temperature fluctuated daily from normal to 100, 101, and occasionally 102 F. Her pulse rate was above 100, her respiratory rate 20. Her lungs and heart were normal with a functional systolic murmur. Her fingers were clubbed and her tongue at times was beefy red. The blood protein was normal in range and ratio; the red blood cell count was 3,680,000; the white blood cell count was 10,300; hemoglobin was 68, polymorphonuclears were 72 per cent, the Kahn reaction was negative. The stools were pasty and light colored. Of 27, 19 showed traces to 4+ reactions to benzidine. On 3, formaldehyde digestion tests for acid fast bacilli showed none. There were no amebas, cysts or ova. Dysentery and

typhoid cultures were negative. Roentgenologically the stomach was normal. The duodenal cap showed a deformity consistent with duodenal ulcer but no crater. The small bowel study with 2 ounces of barium and water each was of real aid in the diagnosis. The roentgenologist diagnosed multiple partially obstructing strictures of the jejunum with possible ulceration at two points. Surgery was declined because of the obvious risk and widespread lesion. Three days before death the patient developed sudden severe abdominal pain and tenderness, suggesting peritonitis. Autopsy confirmed the latter. The gross specimen of the jejunum showed healed constrictions. There was a transverse ulcer with a perforation. In the microscopic picture all was necrotic. There were no tubercles. It was not at all like terminal ileitis but rather a necrotizing, constricting, perforating, multiple ulcerative jejunitis of unknown origin.

DR. HENRY W. CAVE, New York: There is a new drug, a sulfonamide drug, which has been most helpful in our surgery, called sulfathalidine. I have used it in 58 instances simply in the preoperative preparation of patients for small and large bowel intestinal surgery. The drug has three merits. It is more potent than succinylsulfathiazole, it is absolutely nontoxic, and it can be given in smaller doses than sulfaguanidine or succinylsulfathiazole. We have recently given it to patients suffering from ulcerative colitis, and there has been no amazing change in the few patients treated. We have not used it long enough to give any kind of authoritative report on it, but certainly in preparing patients for ileostomy or for subtotal colectomy and for cancer of the colon, who are not in good shape and have ulcerative colitis in an extensive form this drug has been helpful.

Clinical Notes, Suggestions and New Instruments

ARTIFICIAL INSEMINATION AS A MEANS OF PREVENTING ERYTHROBLASTOSIS

EDITH I. POTTER, M.D., AND J. ROBERT WILLSON, M.D.
CHICAGO

The theory of maternal immunization to the Rh factor as the primary etiologic agent in the production of erythroblastosis has become widely accepted in the last few years. Clinical observations are in remarkably close agreement with the findings which are to be expected on the basis of the theory, and although part of the actual mechanism by which the disease is produced is still unknown the basic facts must be considered as established. The following conditions should exist if the theory is correct:

1. The mother is Rh negative.
2. The father is Rh positive.
3. The fetus is Rh positive, the Rh positive gene being inherited as a mendelian dominant.
4. The Rh factor passes from the fetus to the mother. The mode of transmission has not been proved but is presumed to be by passage of Rh positive fetal erythrocytes from the fetal to the maternal circulation.
5. Anti-Rh agglutinins are produced in the maternal organism.
6. Anti-Rh agglutinins pass from mother to fetus.
7. An antigen-antibody response occurs in the fetus.

All of these conditions are in agreement with clinical observations. Almost all of the mothers who have been tested are Rh negative, and in the few instances in which erythroblastosis has been reputedly found in the infants of Rh positive women the disease may have been due to immunization by some other antigen, or there may have been an error in performing the test or in the diagnosis of erythroblastosis. Almost without exception the fathers and the affected infants have been Rh positive. Agglutinins have been demonstrated in a high percentage of adequately studied mothers; moreover, inability to demonstrate agglutinins in vitro does not necessarily indicate physiologic absence. The pathologic lesions which characterize erythroblastosis are abnormal destruction and production of

From the Department of Obstetrics and Gynecology, the University of Chicago and the Chicago Lying-in Hospital.

erythrocytes. The destruction is best explained as an antigen-antibody reaction and the abnormality in blood formation as secondary to the blood destruction.

Three further clinical observations which must be explainable by this theory if it is correct are (1) the development of the disease in the offspring of only a small proportion of women who are Rh negative, (2) the rare occurrence in a first pregnancy and (3) the almost constant repetition in pregnancies subsequent to one in which an infant develops erythroblastosis.

The fact that erythroblastosis ordinarily has an incidence of only one in every three or four hundred births, while in a random population approximately one in eleven pregnant women is Rh negative and is carrying an Rh positive child, indicates that some additional element must be present before erythroblastosis will develop, even though the Rh distribution would permit its occurrence. The most probable inciting factor is an abnormality of the placenta which permits fetal erythrocytes to escape into the maternal circulation. It might be suggested that fetal cells enter the maternal blood in all pregnancies and that those Rh negative women who give birth to normal infants are incapable of forming antibodies. It is unlikely, however, that no more than 3 per cent of Rh negative women are capable of such response, and future investigations may disclose some heretofore unsuspected precipitating agent.

Erythroblastosis is rarely found in a first born infant unless the mother has had a previous abortion or blood transfusion. When it does occur in a first pregnancy the disease is usually mild; in the series of over 100 infants with erythroblastosis observed at the Chicago Lying-in Hospital there have been no fatal cases among those born to untransfused primigravida women. If maternal immunization could be produced during the course of a single pregnancy and a sufficient concentration of antibodies attained to cause a typical immune response in the fetus, there would seem to be no reason why erythroblastosis should not occur with the same frequency in primigravida as in multigravida women.

Furthermore, if the immunity was initiated by and the manifestations were limited to a single pregnancy it seems most improbable, not only that first born infants would escape, but that a pathologic lesion identical to that first producing the disease, such as a break in placental vessels, would exist in all succeeding pregnancies.

The fact that almost all women bear one or more unaffected children before giving birth to an infant with erythroblastosis and that practically all infants born subsequently are affected with the disease seems definite evidence that the immunity is ordinarily established in the pregnancy preceding the first in which erythroblastosis is evident and that once produced it is either permanent or is further stimulated by some condition inherent in all pregnancies.

On the basis of the foregoing conclusions it appears that the only infants who should escape the disease after the mother has once become immune are those who do not possess the Rh antigen necessary to complete the antigen-antibody reaction, i. e. those who are Rh negative. The three Rh negative children observed at the Chicago Lying-in Hospital whose older siblings died of erythroblastosis have all been normal. All Rh positive children born subsequent to an infant with erythroblastosis have had the disease.

The first such Rh negative infant was the child of a woman who had had six previous pregnancies: a normal female in 1931, abortion at eight weeks in 1933, abortion at six weeks in 1936, remarriage followed by a normal female in 1937, a normal male in 1939 and a stillborn infant with typical erythroblastosis in 1942. Anti-Rh agglutinins were present in this woman's blood two months after the delivery in 1942. In 1943 a normal infant was born in spite of the fact that anti-Rh agglutinins were present in the maternal circulation at that time. This last child is Rh negative, the mother is Rh negative and the second husband is Rh positive.

The second Rh negative infant was one of twins and has been previously reported.¹ The mother was Rh negative, the father Rh positive; one twin who was Rh positive died of erythro-

blastosis, while the twin who was Rh negative was unaffected. No anti-Rh agglutinins were demonstrable at any time. The mother had had one previous pregnancy ending in the delivery of a normal child, who was 9 years of age at the time the twins were born. This case indicates that an Rh negative infant will escape the disease in an environment that is capable of producing it in an infant who is Rh positive.

The third infant is the most important and is the one with whom this paper is primarily concerned. We have observed previously that, as would be expected, a woman who has had an infant with erythroblastosis by one husband will have infants with the same disease by another Rh positive husband. We believe, however, that if she becomes pregnant by sperm from an Rh negative man she may be assured a normal child. Artificial insemination by sperm from an Rh negative donor would seem, therefore, a means by which a woman who has been immunized to the Rh factor could give birth to a normal infant.

Mrs. A at the age of 31 delivered a female child who was normal at birth and who is now alive and well and of blood group O Rh +. Three years later she had a spontaneous abortion. The following year she again became pregnant and gave birth to female twins both of whom exhibited clinical evidence of erythroblastosis. Both died, and the diagnosis was confirmed at postmortem examination. The blood of the patient was found to be A Rh —, the husband O Rh +. The twins were not tested. In view of the existence of typical erythroblastosis in these offspring it was considered unwise for her to attempt further pregnancies except by insemination with semen from an Rh negative man. Approximately one year later the patient was artificially inseminated on the fourteenth and sixteenth days of one menstrual cycle and on the thirteenth and fifteenth days of the following cycle. She did not conceive and two months later was inseminated on the eleventh and sixteenth days with sperm from another donor. Two hundred and sixty-eight days after the last insemination she gave birth to a normal female infant whose blood is A Rh —. The infant is now 2 months of age and has had no symptoms of erythroblastosis.

The fact that a woman may give birth to a succession of infants with erythroblastosis by one man and will continue to have children with the same disease by another Rh positive man, and that a woman who has had infants with erythroblastosis will have a normal child if impregnated with sperm from an Rh negative individual, seems further definite proof that fetal response to maternal immunity produced by the Rh factor is the fundamental cause of erythroblastosis.

SUMMARY

Further evidence to support the theory of maternal immunization to the Rh factor as a cause of erythroblastosis lies in the fact that an Rh negative woman who had given birth to infants with erythroblastosis was successfully impregnated by artificial insemination with Rh negative sperm and gave birth to a normal Rh negative infant.

5841 Maryland Avenue.

Council on Foods and Nutrition

ACCEPTED FOODS

The following additional foods have been accepted as conforming to the Rules of the Council on Foods and Nutrition of the American Medical Association for admission to Accepted Foods.

GEORGE K. ANDERSON, M.D., Secretary.

GRAIN PRODUCTS (See Accepted Foods, 1939, p. 95).

Wheat Germ Products Company, Little Neck, N. Y., Sophie R. Gordon, M.A., 54 Irving Place, New York 3, N. Y.

GORDON'S WHEAT GERM.

Analysis (Submitted by manufacturer).—Moisture 11.20%, ash 4.42%, fat 10.53%, protein 30.20%, fiber 1.95%, carbohydrates other than crude fiber (by difference) 44.1%, nitrogen-free extract 41.60%, iron (Fe) 0.010%, copper (Cu) 0.0003%, manganese (Mn) 0.008%.

Calories.—434 per hundred grams, 124 per ounce.

Vitamins.—Thiamine 2.9 mg., riboflavin 0.98 mg. per hundred grams.

1. Potter, Edith L.: A Double Ova Pregnancy in Which the Rh+ Twin Developed Erythroblastosis, *J. Pediat.* 24: 449, 1944.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - CHICAGO 10, ILL.

Cable Address - - - "Medic, Chicago"

Subscription price - - - - Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, FEBRUARY 24, 1945

HAZARDS IN THE SALICYLATE TREATMENT OF RHEUMATIC FEVER

Dangers encountered in the administration of large amounts of salicylates recently have been reported. Salicylates have long been used in the treatment of rheumatic fever. Physicians are familiar with the astonishing relief the drug gives the stricken child. Acutely inflamed joints that are so sensitive that they cannot tolerate the weight of the bedclothes soon are able to resume their normal function after the administration of salicylates. The antipyretic properties of the drug are as striking as are the analgesic effects.

Recently Coburn¹ advocated the administration of large doses of salicylates in acute rheumatic fever. He recommended the intravenous administration of 10 Gm. of sodium salicylate in 1,000 cc. of 0.9 per cent sodium chloride every day for four days. Intravenous medication was given slowly over a period of four to six hours, so that sufficiently high concentrations of the drug in the body could be reached and maintained. Plasma salicylate values of 400 micrograms per cubic centimeter could be attained by his method. In fact, Coburn believed that values of 150 to 200 micrograms, easily attained by oral administration of salicylates, while providing relief from the acute symptoms of rheumatic fever, failed to halt the progress of the disease. He contended that serum salicylate values of 350 micrograms per cubic centimeter or more must be maintained if the "rheumatic reaction" was to be held in check. Protocols of his small series of cases furnished some remarkable results, especially the rapid resolution of the acute phases of the disease, as judged by the quick return of sedimentation rates to normal and the sudden disappearance of clinical signs. Many are not in accord, however, with his thesis of the early curtailment of the damage inflicted by the "rheumatic reaction." It has been pointed out that sufficient time has not elapsed to judge fairly the results of Coburn's treatment. This is particularly true in regard to the incidence of mitral heart disease, pericarditis and pancarditis, common aftermaths of acute rheumatic fever.

Large amounts of salicylates cannot be given without careful clinical observation of the patient. Death and severe complications from salicylates have been recorded.² Patients should be questioned concerning any sensitivity to salicylates before the drug is given. The appearance of tinnitus, vertigo, deafness, nausea or other symptoms should indicate the cessation of further administration of the drug. Hypoprothrombinemia has been reported to follow salicylate therapy;³ some have found that adequate amounts of vitamin K⁴ will protect against this contingency.

The whole problem of salicylate intoxication was recently studied by Fashena and Walker⁵ after their attention had been drawn to the subject by the observation of a patient with salicylate poisoning. They studied 6 children, to whom they gave large amounts of sodium salicylate by mouth every four hours. Blood salicylate levels of 350 micrograms per cubic centimeter were maintained throughout the study. Prolongation of prothrombin time was found in every instance.

Rheumatic fever often is accompanied by a widespread vascular damage, thus increasing the hazard of hemorrhagic complications after salicylate administration. When adequate amounts of vitamin K are given with salicylates, much of the danger of these complications may be prevented. Possible hazards in the administration of salicylates should be remembered so that unnecessary dangers may be avoided.

SENESCENCE, SENILITY AND CRIME

The relation between age and crime is significant socially. East¹ emphasizes that most magistrates are not appointed until they have reached middle age; the preponderance of middle age and elderly judges, he feels, may be far from desirable in cases involving juvenile crime. East quotes a circular in 1936 which declared that, "apart from the obvious advantage attaching to quickness of hearing and of sight in justice, there is the fact that as time goes on men and women justices are apt to lose the freshness of mind and sympathy and the up to date knowledge of social conditions which are of extreme importance for successful work in the juvenile courts." The particular problems of the aged or senile person who commits a crime deserve special study. Although this report cites British figures and British problems, there is ample reason to believe that the situation in the United States

2 Ashworth, C. T., and McKemie, J. F. Hemorrhagic Complications with Death Probably from Salicylate Therapy. *J. A. M. A.* 126:1 (Nov. 25) 1944. Troll, Mary M., and Menten, Maud, L. Salicylate Poisoning. *Am. J. Dis. Child.* 69:37 (Jan.) 1945.

3 Link, K. P.; Overman, R. S.; Sullivan, W. R.; Huefer, C. F., Jr. Schel, L. D.: Studies on the Hemorrhagic Sweet Clover Disease. *Al Hypoprothrombinemia in the Rat Induced by Salicylic Acid.* *J. Biol. Chem.* 117:463 (Feb.) 1943.

4 Meyer, D. D., and Howard Bersel. Productivity of Hypoprothrombinemia and Hypocoagulability of the Blood Salicylates. *Proc. Soc. Exper. Biol. & Med.* 52:234 (June) 1943.

5 Fashena, G. J., and Walker, J. N. Salicylate Intoxication: Studies on the Effects of Sodium Salicylate on Prothrombin Time and Alkaline Reserve. *Am. J. Dis. Child.* 68:369 (Dec.) 1944.

1 East, W. Norwood. Crime, Senescence and Senility. *J. Mod. Soc.* October 1944, p. 56.

1. Coburn, A. F.: Salicylate Therapy in Rheumatic Fever, *Bull. Johns Hopkins Hosp.* 77:435 (Dec.) 1943.

is in most respects parallel. The trial of aged persons by their contemporaries may be unsatisfactory, East says. Age itself is not necessarily a true measure of senescence, using that word for the normal process of growing old, or of senility, used in a sense of abnormal mental states which sometimes supervene toward the close of life. Consequently special attention should be given to the manner of thought and behavior of the aged. The onset of normal old age, or senescence, is a physiologic condition rather than a pathologic state, and is therefore difficult to determine its onset. The chronologic age is often misleading as an index of the onset of this physiologic process: authorities have placed it in the early forties, at 55, at 65 and probably at many other ages. Most modern students are inclined to agree with the late Sir Humphry Rolleston that in healthy persons the onset of senescence is so stealthy that it is seldom suspected by the person himself. One man may be senile at 60 while another is vigorous in both mind and body at 80. In criminology the important feature of normal senescence is the degree of control exerted by the will when directed toward the discouragement of illegal acts which would put the interests of the individual ahead of those of society in general. East adds to this the action of the will in encouraging activities which are legal and useful to society, however strongly they may be opposed to the desires of the participant. When the hitherto blameless senescent becomes involved in illegal behavior as a result of mental deterioration, he deserves, East says, the fullest understanding from those who judge him, and this requires insight into the background of his mental life.

Normal aging passes into senility when the impairment of intellectual, emotional and volitional attributes of mind becomes excessive and the mental activities are imperfectly synchronized with resultant inability to form well considered opinions, to exert sustained effort and when social maladjustment results. The reason senility develops in some persons and not in others appears to depend, at least in part, on the inherent constitutional makeup and the degree of cerebral arteriosclerosis present, on the stresses which they have experienced and indirectly on the manner of life. Used in this sense, the term senility would be restricted to senile and arteriosclerotic dementias. Although aged prisoners are generally treated under a milder form of discipline than others, the mental background of the offender before trial is also important but has received less attention than is due it. In matters involving criminal responsibility in the aged, East says attention must be paid not only to the standards of so-called normal persons but also to the conduct and mental condition of the senile offender during his younger years. Where mental abilities are superior during the prime of life, it is especially easy to overlook perceptible degrees of deterioration due to age because the offender is com-

pared with those of merely average intelligence and ability of comparable years.

Out of a group of 9,197 prisoners of both sexes in the prisons of England and Wales recently convicted for various offenses, 290 were aged 60 years or over. Of these, 71 were first offenders and 194 had been previously convicted three times or more. The number and proportion of aged persons in the population is constantly increasing. Although the incidence of crime among the aged and senile will doubtless vary in response to hereditary, social and economic factors as well as to age, the problem will doubtless increase more or less consistently. Close working contact between physicians familiar with the mental problems of aging and of the courts is highly desirable in order that the cause of justice may be best served for those criminals of older years whose actions are affected by senescence or senility.

PARAGONIMIASIS IN RETURNING WAR VETERANS

When patients complain of chronic cough, pain in the chest and bloody sputum the physician today considers tuberculosis, lung tumor and bronchiectasis in the differential diagnosis, with lesser consideration to blastomycosis and other diseases. To these, in the case of men who have been in the tropics and particularly the Asiatic-Pacific theater, paragonimiasis, or endemic hemoptysis, caused by infection with the lung fluke *Paragonimus westermani*, must now be added.

Miller and Wilbur¹ have recently reported 3 cases in Marines and have seen 4 others. Numerous additional cases will no doubt be reported as the disease increases and as it is recognized. Paragonimiasis is contracted by eating raw or inadequately cooked crabs or crayfish. The encysted metacercariae (larval worms) so ingested burrow through the jejunum into the peritoneal cavity; then they migrate to the lungs and sometimes to other parts of the body. Small nodular granulomatous lesions are formed about the flukes in the walls of the smaller bronchi. The adult worms pass ova, which are eliminated with the sputum or feces.

The symptoms are caused by the presence of the worms or their ova in the various tissues of the body, particularly the lungs and blood vessels, or by secondary infection. The agents act as mild irritants, inducing a chronic inflammatory reaction and leading to tubercle-like lesions or to thrombosis. Despite these changes the physical and x-ray findings may be absent or minimal. They may be those of a chronic bronchitis or bronchiectasis. Eosinophilia is not a constant accompaniment. The diagnosis is made by demonstrating the characteristic ova in the sputum or, less

1. Miller, John J., and Wilbur, Dwight L.: Paragonimiasis (Endemic Hemoptysis), U. S. Nav. M. Bull. 42:108 (Jan.) 1944.

commonly, in the feces. Depending on the number and predominant location of the worms and their ova elsewhere in the body, extrapulmonary forms of the disease have been described. These include abdominal, cerebral and lymphoglandular forms. Specific treatment is not now available.

The chain of infection is precarious because two intermediate hosts are required in addition to the definitive host. The ova are passed from the definitive host, which is man or some other mammal. The larvae, which develop from the ova, enter a specific species of snail. After further development the larvae enter a crab or a crayfish, from which man may be infected.

Although the life cycle of these lung flukes is complex, the possibility exists that the infection can be established in this country. The cases need to be recognized as early as possible so that careful disposal can be made of the sputum. While this disease does not yet rank in importance with filariasis and malaria as a problem in veterans returning from the Pacific theater, its incidence will probably increase as our troops enter the areas in which the disease is more prevalent. Because of the insidious onset and the chronic course the disease may sometimes make its first clinical appearance after the men have left military service. In cases of obscure disease of the chest in veterans the civilian physician should consider the diagnosis of paragonimiasis.

Current Comment

THERAPY OF ALCOHOL ADDICTION

The treatment of chronic inebriety today often includes services by the lay therapist, who participates in the rehabilitation of the chronic alcoholic addict. The qualifications of the lay therapist have become more important because many of those who have recovered from alcoholism desire to help in the rehabilitation of those who are still addicted. The therapy of alcoholism is complex; agreement has not yet been reached as to the preferred method or methods of procedure. A recently published symposium¹ on this subject views the problem in its various aspects. The prevention of inebriety is considered by Abraham Myerson, who suggests that the prevailing social attitudes toward the chronic drinker must be altered through education and social propaganda. The aversion method recognized as an application of the conditioned reflex is the subject of an important critique by Professor Carlson. The theory of the allergic nature of alcohol addiction is analyzed and dismissed by Dr. Haggard. An attempt is made to establish an alcoholic personality. Other papers in the symposium include discussions of the relation between the alcoholic patient and the physician, the contribution of the minister to the treatment of the alcoholic addict and the therapeutic role of Alco-

holics Anonymous from the point of view of a sociologist. The physician, the sociologist, the judge, the minister and the psychologist will all find this symposium the source of invaluable information in their dealings with the important and growing problem of the chronic inebriate.

SOME FACTS ABOUT TSUTSU- GAMUSHI DISEASE

Recent studies indicate that typhus-like fevers in Asiatic and Australasian regions are closely related to if not identical with the Japanese tsutsugamushi disease. Farner and Katsampes¹ have made a comprehensive and timely review of the history, nature and etiology, distribution, variations and nomenclature of the disease. Tsutsugamushi is "the Japanese pronunciation of two Chinese idiographs meaning small creature, which, according to early Chinese literature, caused disease by boring into the human body."¹ Japanese investigators showed that the disease is transmitted by the bite of chiggers (larval trombiculid mites), which causes a characteristic lesion of the skin. The typhus-like infections included by Farner and Katsampes under tsutsugamushi disease appear to be caused by mite borne rickettsias. Rickettsia tsutsugamushi is the accepted name for the Japanese strain; its relationship to other strains is under study. The reservoirs or natural hosts of these rickettsias are animals, particularly rats, field mice, possibly certain birds, and the field vole. Damp ground covered by dense grass and shrubbery undoubtedly favors the development of the larval mites. Farner and Katsampes conclude that "provisionally it seems best to assume that tsutsugamushi disease is primarily a widespread disease of several (or many) species of vertebrate animals in Asia and Australasia, transmitted by certain trombiculid larvae and contracted accidentally by humans in contact with habitats containing the mite larvae." As shown by recent reports, the infection is of immediate concern in the Pacific warfare² and has been found to occur in places where it was unknown or unsuspected. The wide spread of mite borne rickettsiosis, variations in the factors concerned and in clinical manifestations, and the unavoidable lack of close cooperation on the part of early investigators have led to great confusion in the terminology of the disease. Farner and Katsampes list some fifty-five names used in writings about the fevers now included under tsutsugamushi disease. Of these names rural, tropical or scrub typhus, typhus group, Mossman fever, and tsutsugamushi disease have been used by English writers. The establishment of the etiology of this disease or group of related diseases has brought with it effective methods of prevention. Personal protection consists in the avoidance of bites by mites. The epidemic described by Logue² was controlled by thorough cleaning of camp sites of grass, shrubbery and rubbish, destruction of rodents, and individual protection, including the thorough application of dimethyl phthalate.

1. Farner, D. S., and Katsampes, C. P.: Tsutsugamushi Disease. U. S. Nav. M. Bull. 43: 800 (Oct.) 1944.

2. Logue, J. B.: Scrub Typhus: Report of Epidemic in the Southwest Pacific. U. S. Nav. M. Bull. 43: 645 (Oct.) 1944. Ahlm, C. E., and Lipshutz, Jack: Tsutsugamushi Fever in the Southwest Pacific Theater. J. A. M. A. 124: 1095 (April 15) 1944.

MEDICINE AND THE WAR

ARMY

ARMY RECONDITIONING BASED ON INDIVIDUAL NEEDS

More than 100,000 sick and wounded are now participating in the Army's reconditioning program, in which emphasis is focused on the individual soldier's own interests, his likes or dislikes, talents and background. Mass regimentation is out. Col. Augustus Thorndike is in charge of the reconditioning Division of the Office of the Surgeon General, which was created in July 1943. It is his belief that reconditioning is a new technic in modern military medicine.

The reconditioning program is divided into three broad general phases: physical reconditioning, educational reconditioning and occupational therapy. The physical reconditioning phase embraces a scientifically planned schedule of activities, including remedial exercises, bed calisthenics, sports and games, gymnastics, combatives, guerrilla exercises, marching and running. All are designed to retard bodily deterioration during the early stages of convalescence and later to restore the strength, endurance and coordination which go into the makeup of an efficiently performing soldier. Educational reconditioning is intended to augment the medical and surgical cures or repairs with a varied list of subjects which will stimulate the minds of men compelled to lie for weeks or months in a hospital bed, to forestall the mental depression setting in with idleness. Occupational therapy, like the bed exercises and educational activities, starts as soon as the patient is physically able. The mild exercise and mental relaxation of constructive work by bedridden patients has been found to speed up their recovery beyond the rate accomplished by medical care.

Through the efficient functioning of the Medical Division, the Preventive Medical Service and other branches of the Army Medical Department, the Army has reduced the death rate from disease to a figure that is lower than that for any of the ten peacetime years preceding our entrance into the war. The Surgical Service has established a new record in military history by saving the lives of 97 per cent out of every hundred wounded men who reach a hospital alive.

In the same way this latest undertaking of the Medical Department, the Reconditioning Division, has reached the point where 12,000 officers and enlisted patients are returned to active duty every week.

PLAN TO INCREASE BED CAPACITY OF ARMY HOSPITALS

Major Gen. George F. Lull, deputy surgeon general, recently announced that plans are nearing completion to increase the bed capacity of the Army's general and convalescent hospital system by 70,000 to care for the additional sick and wounded soldiers returned from overseas. At present the rate of evacuation of casualties to this country is more than 30,000 each month, as compared with the first six months of 1944, when the total was approximately 9,000 a month. One means of providing the additional facilities has been the temporary conversion of four station hospitals to the general and convalescent type. They will be known as U. S. Army general hospitals but not as name general hospitals. These are located at Camp Edwards, Falmouth, Mass.; Camp Pickett, Blackstone, Va.; Camp Butler, Durham, N. C., and Camp Carson, Colorado Springs, Colo.

Another feature of the program will be the expansion of some convalescent hospitals in several of the service commands. After a soldier has been treated at the general hospital which specializes in his particular type of injury, the Army will transfer him to a convalescent hospital. There reconditioning treatment speeds his recovery. This procedure also makes available more general hospital beds for the more serious cases. In

addition to the four named, the list of expanded installations includes Camp Upton Convalescent Hospital, Yaphank, L. I., N. Y.; Fort Story Convalescent Hospital, Virginia Beach, Va.; Welch Convalescent Hospital, Daytona Beach, Fla.; Wakeman General and Convalescent Hospital, Camp Atterbury, Ind.; Percy Jones General and Convalescent Hospital, Battle Creek, Mich.; Mitchell Convalescent Hospital, Canipo, Calif., and Old Farms Convalescent Hospital, Avon, Conn.

MAJOR GENERAL HAWLEY PAYS TRIBUTE TO ARMY NURSE CORPS

Major Gen. Paul Hawley, chief surgeon of the European theater of operations, recently paid high tribute to the Army Nurse Corps on its forty-fourth anniversary, stating that "one of the most glorious pages in the history of the Army Nurse Corps is being written today. . . . Magnificent is the one word that describes the job they are doing."

In commenting on the serious shortage of nurses which exists not only in hospitals overseas but at installations within the United States as well, General Hawley pointed out that the critical lack of nurse reinforcements has forced the Medical Department three times to reduce the number of nurses stationed with each hospital. In 1940 there were 120 nurses to a 1,000-bed army general hospital; in 1943 the number was cut to 105 and in 1944 to 83. At the same time the bed capacity of many hospitals has been increased, with 1,000 bed hospitals carrying an average load of 1,300 patients each. Nurses who have been overseas for more than two years are working twelve, often as long as sixteen, hours a day. "The army nurse is a good soldier; she asks no favors. But she is becoming tired. There is only one solution: we must have more nurses," General Hawley stated.

SUDDEN TOOTHACHE DURING HIGH ALTITUDE FLYING

Sudden toothache occurring during high altitude flying is a serious personnel problem for the Army Air Forces, according to a recent article by Drs. Balint Orban and Beryl T. Richey in the *Journal of the American Dental Association*. Two out of every hundred cadets and officers given altitude training may experience such severe pain that their only thought is of immediate and rapid descent. They found that recently placed fillings in deep cavities are most likely to cause trouble. A diseased tooth which might not cause pain on the ground for a period of years was affected by a drop in the barometric pressure. Low temperature in high altitude flying is a negligible factor in pain. The article states that "pain during ascent indicates a tooth with a vital pulp, pain during descent a tooth with nonvital pulp; the sooner the pain starts during ascent the more acute the inflammation in the tooth is apt to be."

UNIVERSITY OF ILLINOIS EVACUATION HOSPITAL IN GERMANY

The University of Illinois Evacuation Hospital (the 27th) is now stationed with the Seventh Army in Germany. Moved from a camp in Kentucky to Africa, then to Italy, then southern France and on north, the unit moved up close behind the battle lines of the Seventh Army onto German soil. It has won three battle stars for service in three countries. The hospital is a 750 bed unit whose total personnel, including patients, ranges between 1,300 and 2,000. The hospital unit is staffed largely by faculty men and alumni of the university's colleges in Chicago.

ARMY AWARDS AND COMMENDATIONS

Major Morris Grayson

The Bronze Star was recently awarded to Major Morris Grayson, formerly of Long Island, N. Y., for his work on malaria control at the base of his unit during the spring and summer of 1944. Situated in a highly malarial district, it was estimated by medical officers that a malarial rate of a minimum of 40 per cent of the group's personnel would result at the unit's base unless the prevailing conditions in the area could be remedied. Major Grayson volunteered to supervise the task of completing a comprehensive preventive program of draining swamplands, clearing vegetation, spraying stagnant waters and educating the group's personnel on individual methods of combating malaria. This preventive work was accomplished so successfully over an area of 16 square miles that less than 1 per cent of the group's personnel contracted malaria during 1943. The citation accompanying the award states that, "after volunteering to take charge of the malaria control program, he entered into every phase of the task and by his example kept his men at a peak of efficiency. Through his devotion to duty, unflinching efforts in the face of all difficulties and outstanding efficiency, Major Grayson has thus reflected great credit on himself and on the armed forces of the United States of America." Dr. Grayson graduated from the University of Lausanne Medical School, Switzerland, in 1937 and entered the service in November 1938.

Colonel Karl R. Lundeberg

The Legion of Merit was recently awarded to Col. Karl R. Lundeberg, formerly of Washington, D. C., for "service from January 1941 to November 1944 in initiating and supervising the development of new methods for the improved control of communicable diseases in the Army, with particular reference to the development of the present program for vaccination against infectious diseases and to the general control of infectious diseases among troops. To these developments in preventive medicine in the Army he has contributed original ideas and direction. A tireless worker with a great fund of knowledge and experience, he has been responsible for many of the important advances in modern military preventive medicine." Dr. Lundeberg graduated from the University of Minnesota Medical School, Minneapolis, in 1926 and entered the service Feb. 24, 1930.

Major Paul Ehrlich Kaunitz

The Bronze Star was recently awarded to Major Paul E. Kaunitz, formerly of New York, for "meritorious service in connection with military operations against the enemy as S-3, 68th Medical Group, from Dec. 10, 1943 to Sept. 21, 1944 in England, France and Belgium. Prior to D day Major Kaunitz demonstrated unusual "ability in training the personnel and integrating the functions of his group's various units into a highly efficient organization. During operations on the continent Major Kaunitz ably coordinated and controlled an effective evacuation system which transported thousands of battle casualties out of battle areas to medical installations." Dr. Kaunitz graduated from New York University College of Medicine, New York, in 1938 and entered the service May 1, 1941.

Captain Maurice S. Raben

The Soldier's Medal was recently awarded to Capt. Maurice S. Raben, formerly of Port Chester, N. Y. The citation read that "at Harvard Army Airfield, Harvard, Neb., on Oct. 24, 1944 an army airplane crashed and burst into flames and its practice bombs exploded. With complete disregard for his own safety he twice entered a compartment of the burning aircraft, searching for members of the crew thought to be trapped in the wreckage. In the performance of these acts he sustained first degree burns." Dr. Raben graduated from New York University College of Medicine, New York, in 1941 and entered the service Oct. 14, 1942.

Captain Frank R. Hill

Capt. Frank R. Hill, formerly of Cleveland, was the recent recipient of the Bronze Star "for meritorious service in connection with military operations against the enemy as neurosurgeon, 45th Evacuation Hospital, semimobile, from June 17,

1944 to Aug. 1, 1944 in France. Captain Hill performed numerous skilful operations on wounded soldiers, often working for twenty-four hour periods without rest or relief, thereby saving the lives of many American soldiers. The surgical judgment and operative technic displayed by Captain Hill were of the highest order and reflect credit on himself and the military service." Dr. Hill graduated from New York University College of Medicine, New York, in 1931 and entered the service Sept. 12, 1942.

Colonel Alfonso M. Libasci

Col. Alfonso M. Libasci, formerly of Brooklyn, was recently awarded the Bronze Star for "meritorious service in planning medical activities in support of the first Philippine operation." Dr. Libasci has also been awarded the Legion of Merit (THE JOURNAL, Sept. 16, 1944, p. 176). He graduated from Long Island College of Medicine, Brooklyn, in 1931, was commissioned as a first lieutenant in the medical reserve corps in 1933 and was transferred to the regular army in 1934.

Captain Frank J. Lavieri

Capt. Frank J. Lavieri, formerly of Chicago, was recently awarded the Bronze Star for meritorious achievement in action in Normandy with a paratroop unit, and the Presidential Unit Citation, awarded to all members of his paratroop group among the first to land in Normandy on D day. Dr. Lavieri graduated from the University of Illinois College of Medicine, Chicago, in 1930 and entered the service Oct. 31, 1942.

Lieutenant Colonel James E. Jobes

Lieut. Col. James E. Jobes, formerly of Indianapolis, was recently awarded the Bronze Star for his services as surgeon in the European theater of operations. Major Gen. Paul J. Hawley, chief surgeon of the European theater of operation made the presentation. Dr. Jobes graduated from Indiana University School of Medicine, Indianapolis, in 1929 and entered the service Jan. 17, 1941.

Major Merrill Moore

Major Merrill Moore, formerly of Squantum, Tenn., was recently awarded the Bronze Star by Major Gen. O. W. Griswold, commanding general of the 14th Army Corps, "for meritorious achievement in connection with military operation against the enemy in the Southwest Pacific." Dr. Moore graduated from Vanderbilt University School of Medicine, Nashville in 1928 and entered the service May 22, 1942.

Captain Sidney Hershel Mirbach

Capt. Sidney H. Mirbach, formerly of Bethlehem, Pa., was recently awarded the Bronze Star for "distinctive service in connection with military operations against the enemy from July 25 to July 30, 1944." Dr. Mirbach graduated from Jefferson Medical College of Philadelphia in 1937 and entered the service in November 1943.

Captain Harold J. Stoen

Capt. Harold J. Stoen, formerly of Lafayette, Ind., was recently commended by the commanding general of the 13th A. A. F. for his "courageous actions" during an attack by Japanese bombers, when "without thought of self" he left his place of shelter to aid his men. Dr. Stoen graduated from Rush Medical College, Chicago, in 1936 and entered the service in July 1942.

Captain Robert V. Carter

The Air Medal with two oak leaf clusters, Presidential Unit Citation, and Croix de Guerre with palm were recently awarded to Capt. Robert C. Carter, formerly of Tarzana, Calif. Dr. Carter graduated from the University of Illinois College of Medicine, Chicago, in 1936 and entered the service Oct. 15, 1942.

Captain Joseph A. Kurcz

The Bronze Star was recently awarded to Capt. Joseph A. Kurcz, formerly of Detroit, for outstanding service in Belgium. Dr. Kurcz graduated from the University of Michigan Medical School, Ann Arbor, in 1929 and entered the service Nov. 6, 1942.

NAVY

NONMEDICAL VENEREAL DISEASE
CONTROL OFFICERS

The Navy Department recently announced the plans for immediate procurement of fifty nonmedical venereal disease control officers. Candidates for commissions will be considered from civilian life as well as from the ranks of officers and enlisted men. Under Special Program No. 166 of the Bureau of Naval Personnel, these officers will be assigned to various naval activities to conduct educational programs in venereal disease control under the direction of the activity's medical officer. These men will act as liaison officers with civilian health authorities in the area to which they are assigned, establish community relations, lecture on the causes of venereal diseases and how to avoid them, assisted by such visual aids as motion pictures and slides, and keep statistical records on venereal disease control work in their respective districts. They will not administer actual treatment.

Male civilians up to the age of 45 years who are interested and feel qualified for this work may apply at their nearest office of naval officer procurement. If accepted, they will be commissioned in a rank comparable with age, with the maximum rank of lieutenant.

Qualifications are as follows:

1. Applicants should possess the general qualifications for officers as outlined in the Officer Qualifications Manual, and in addition one of the following:

(a) A college degree in any of the basic sciences, public health administration, health education, sociology, psychology or related fields, and at least one year of practical experience in venereal disease control with the U. S. Public Health Service, state and local health departments, the Division of Social Protection (Federal Security Agency), the U. S. Army, the American Social Hygiene Association and affiliates, the National Tuberculosis Association and affiliates or any recognized volunteer agency of comparable caliber.

(b) A college degree and at least three years of practical experience in some phase of public health work with one or more of the organizations specified.

(c) In lieu of a college degree, a minimum of two years of college credits normally leading to a degree, plus (1) at least three years of practical experience in some phase of public health work, one year of which must have been in venereal disease control, or (2) at least four years of experience in one or more of the following fields: health education with public, private or voluntary agencies; newspapers, advertising or public relations work; community or trade organizations, home demonstration or extension work, or adult education.

With regard to physical requirements, consideration to granting waivers for physical defects will be given candidates whose deficiencies are not such as to interfere with the performance of duty. Desirable candidates should be those who appreciate the necessity of venereal disease control, who would be interested in helping establish proper preventive measures and who would be able to express themselves before groups.

NAVY AWARDS AND COMMENDATIONS

Lieutenant (jg) Laurie Willard Higgins

The Silver Star was recently awarded to Lieut. (jg) Laurie Willard Higgins, formerly of San Diego, Calif. The citation read "for conspicuous gallantry and intrepidity while serving with the First Marine Division on Cape Gloucester, New Britain, Jan. 8, 1944. Traveling almost a mile through constant sniper fire in answer to a call for help from a friendly contingent, Lieutenant, Junior Grade, Higgins courageously administered expert medical aid to the wounded despite the presence of snipers, shielding the injured men from further casualty with his own body. Later he advanced to the battalion observation post, where he rendered urgently needed assistance to wounded men in the face of extremely heavy mortar and sniper fire until it was necessary for him to return to base. Then, organizing his party, he daringly led it through a sniper infested route to his battalion aid station. By this valiant conduct, outstanding

professional skill and disregard for personal safety, Lieutenant, Junior Grade, Higgins contributed materially to the saving of many lives and his actions throughout were in keeping with the highest traditions of the United States Naval Service." Dr. Higgins graduated from the University of Michigan Medical School, Ann Arbor, in 1942 and entered the service July 8, 1943.

Lieutenant (jg) William J. Waters

Lieut. (jg) William J. Waters, formerly of Syracuse, N. Y., was recently commended by the commander, U. S. Naval Forces in Europe. The letter of commendation read:

"Your performance of duty on July 8, July 18 and July 21, 1944, when the base to which you were attached was attacked and partially destroyed by flying bombs, has come to my attention.

"Your assumption of responsibility in the evacuation of casualties and in the immediate treatment of the injured was exemplary and did much to alleviate the suffering.

"For your outstanding initiative and unusual sense of responsibility, you are hereby commended.

"A copy of this letter will be forwarded to the Chief of Naval Personnel to be filed in your official record."

Dr. Waters graduated from Syracuse University College of Medicine in 1942 and entered the service in June 1943.

Lieutenant Ralph Emile Kirsch

Lieut. Ralph E. Kirsch, formerly of Safety Harbor, Fla., was recently commended "for exceptional services as flight surgeon attached to Photographic Squadron 4 operating in the Pacific Area from May to September 1944. Voluntarily participating in hazardous flights over heavily defended enemy targets in the interest and advancement of aviation medicine, Lieutenant Kirsch made and recorded valuable observations under fire and, by the special techniques of his own devising, demonstrated the important physiologic changes brought about by such flight circumstances. Lieutenant Kirsch's splendid initiative and expert professional skill in obtaining vital scientific data in the face of grave personal danger were in keeping with the highest traditions of the United States Naval Service." Dr. Kirsch graduated from the University of Chicago School of Medicine in 1939 and entered the service Feb. 22, 1943.

Lieutenant Thomas Edward Bailly Jr.

The Navy and Marine Corps Medal was recently awarded to Lieut. Thomas E. Bailly Jr., formerly of San Francisco. The citation read "for heroic conduct in rescuing a seaman from drowning at Tutuila, Samoa, on July 22, 1943. Hearing cries for help from a man who had been caught in a rip tide and swept beyond the reef, Lieutenant (then Lieutenant, Junior Grade) Bailly unhesitatingly dashed into the water and, completely disregarding his own safety and the difficult conditions attendant on such an attempt, courageously swam to the exhausted helpless man and returned him close enough inshore to permit a life line to reach them. Lieutenant Bailly's splendid initiative and unselfish efforts at great personal risk saved the life of his comrade and were in keeping with the highest traditions of the United States Naval Service." Dr. Bailly graduated from the University of California Medical School, San Francisco, in 1940 and entered the service Dec. 21, 1942.

Lieutenant Joseph M. Foley

The Bronze Star was recently awarded to Lieut. Joseph M. Foley, formerly of Dorchester, Mass. The citation accompanying the award read "for meritorious performance of duty as a company medical officer of the Second Beach Battalion during the assault on France, June 6, 1944. Lieutenant Foley under heavy gunfire repeatedly exposed himself to administer to the wounded and, without regard for his personal safety, supervised the evacuation of wounded from his section of the beach. His courage and devotion to duty were an inspiration to all officers and men having contact with him. The skill and professional ability displayed by Lieutenant Foley under most trying conditions were in keeping with the best traditions of the United States naval service." Dr. Foley graduated from Harvard Medical School, Boston, in 1941 and entered the service Feb. 22, 1943.

MISCELLANEOUS

MILITARY DEATH LOSSES

According to the statisticians of the Metropolitan Life Insurance Company, New York, military death losses in action for all belligerents during 1944 probably exceeded 2 million. They estimate that the battle toll of the Axis countries was about 1¼ million, while the Allies lost considerably less than a million men. The year 1944 was the third in succession in which the military death toll approached or exceeded the 2 million mark and the fourth in succession in which the year's toll was on a scale comparable to the annual losses in the first world war. American battle losses last year, estimated at 245,000, were the greatest ever suffered in any year in our entire history. This estimate is based on official reports and includes allowances for deaths among the wounded and missing as well as for the inevitable delay in the receipt of death reports.

While the aggregate losses for all belligerents were about equal in the past two years, our losses last year were about five times as many as in 1943 and more than three times as many as in the whole twenty-five months from Pearl Harbor to the end of 1943. On the Western front alone our losses in 1944 exceeded our total for all of the first world war. However, the maximum monthly rate reached in December 1944 was about the same as the monthly peak of the first world war in October 1918, when 19,000 of our men were killed in action. More than four fifths of American losses during 1944 were in the Army, and losses among the Marines, mainly in Pacific area land fighting, accounted for about half of the Navy's total. Considering the scale of fighting by our fleet last year, the battle toll among ship personnel was relatively small.

Japan admitted that 168,000 of her men were killed and wounded in 1944, but compilation of figures covering the various operations in the Pacific and East Asia indicates that her death losses actually were upward of 350,000 and may have exceeded 400,000. The sinking of troop transports and barges accounted for a significant proportion of this total, while her naval personnel lost heavily, particularly in the two major battles of the Philippine Sea.

The Germans have been completely silent for more than two years past regarding their current losses. On the Russian front, where most of these were sustained, their combat deaths probably equaled or exceeded those of the Russians. From a careful review of the events on all Germany's fighting fronts a conservative estimate of her death toll in action in 1944 would be 800,000 men. Various higher estimates published on German losses must be viewed in the light of the fact that Germany has increasingly used nationals of conquered territories in her armies and has ruthlessly sacrificed them.

The statisticians place Russian battle losses in 1944 around 550,000 men. With Russia continuing to bear the brunt of land action against the Nazis last year, the scale and tempo of the fighting, as well as the bitter struggles for key areas such as Warsaw and Budapest, exacted a heavy toll in the aggregate. Much of Russia's gains last year, however, represented territory yielded by the Germans with little more than rear guard fighting, and these cost the Russians relatively few battle casualties.

The operations of British Empire forces increased greatly during 1944 on the Western front, the Mediterranean area, in Burma and in the air over Europe, the statisticians point out. The British navy contributed greatly also to the naval protection of the Atlantic sealanes and the invasion breach heads in France. These far flung actions cost the empire an estimated 125,000 men. At least two thirds of these were from Britain.

The aggregate losses last year among the other allies were considerable, with 10,000 to 15,000 Frenchmen killed in action on the Western front and in other operations. In the Allied total are included many thousand dead in the various contingents of Yugoslavs, Norwegians, Dutch, Belgians, Greeks, Poles and Czechs fighting on our side in Europe, while the Chinese may have lost as many as 50,000 men in the fighting in Burma and in China itself.

Battle losses of the former Axis satellites last year probably reached 100,000. The greater part was borne by Rumanian troops in southern Russia, in the Crimea and in the final engagements leading to their surrender. Hungary lost about half as many as Rumania, largely during the Russian invasion.

MEDICAL ADVISORY GROUP TO THE ADMINISTRATOR OF VETERANS' AFFAIRS

Brig. Gen. Frank T. Hines, administrator of veterans' affairs, recently announced the names of fourteen members of the special medical advisory group to the administrator of veterans' affairs. When it is completed, the group is planned to have nine members. Those who have accepted the invitation to serve in this group are Dr. George Morris Piersol, Philadelphia; Dr. Roy D. Adams, Washington, D. C.; Dr. John Alexander, Ann Arbor, Mich.; Dr. J. Burns Amberson Jr., New York; Dr. George E. Bennett, Baltimore; Dr. William F. Lorenz, Madison, Wis.; Dr. Frederick W. Parsons, New York; Dr. Oliver H. Perry Pepper, Philadelphia; Dr. Irvin Abell, Louisville, Ky.; Dr. Alfred W. Adson, Rochester, Minn.; Dr. W. Edward Chamberlain, Philadelphia; Dr. John S. Coulter, Chicago; Dr. Malcolm T. MacEachern, Chicago, and Capt. Erik G. Hakanson, Bethesda, Md. General Hines stated that this group will guide him in establishing policies and in solving the many perplexing problems that face the administration in the examination and treatment of thousands of young veterans who are being hospitalized from this war. One of the primary problems is securing and training the highly qualified professional and subprofessional personnel needed to care for the increasing number of hospital patients and expanding outpatient group coming to the Veterans Administration. Their services are also expected to be invaluable in outlining and assaying research work in war medicine and making recommendations as to the desirability of results for incorporation in clinical and therapeutic practices in veterans' hospitals. This phase of their work will include important decisions as to the extent to which teaching and research activities should be expanded in the Veterans Administration.

MELLON HOME MAY BE CLUBHOUSE FOR WOMEN OFFICERS

The home in Washington, D. C., of the late Andrew W. Mellon, former Secretary of the Treasury, may be converted into a home and club house for women officers in the medical departments of the armed forces, according to Mrs. Norman T. Kirk, wife of the surgeon general of the Army and president of the Medical Women Army and Navy Club. The home is the property of Stanley McCormick of Chicago and is now occupied by the British Ministry of Aircraft Production. An offer to purchase the five story house has been made by the club. The club is designed to provide hotel accommodations and recreational facilities for army and navy nurses and women doctors. The club has the sponsorship of General Kirk and Vice Admiral Ross T. McIntire, surgeon general of the Navy. Wives of cabinet members and Army and Navy leaders serve on the board of the club.

PRISONERS OF WAR

The State and War departments recently announced that to effect a further exchange with Germany of seriously sick and wounded prisoners of war eligible for repatriation under the Geneva Convention the T. M. V. Gripsholm is en route to Marseilles. Included in the group for exchange will be a number of German civilians in the custody of the United States and Mexico to be repatriated in exchange for United States nationals and nationals of certain other American republics. The last exchange took place in September 1944. The Gripsholm will return to New York in late February. As soon as the identity of the repatriates has been established beyond possibility of a doubt, the next of kin of American personnel will be notified.

DR. FRIDGEIR OLASON AND FAMILY LOST AT SEA

Dr. Fridgeir Olason of Reykjavik, Iceland, lost his life when the boat on which he was returning home last November was torpedoed by a German U-boat. He was a passenger on the Godafoss, sunk in Icelandic waters with a loss of twenty-five lives. His wife and three children also were lost. Dr. Olason

received his M.D. degree from the University of Iceland in 1938. He then served as a public health physician in a rural district in Iceland. In 1942 he came to Vanderbilt University School of Medicine, Nashville, Tenn., where the degree of master of public health was conferred on him in 1943. He then went to Harvard Medical School, Boston, where he completed work for the degree of doctor of public health, the degree being awarded posthumously Nov. 28, 1944. His wife was also a physician and worked in the county health department.

TWO CHURCHES FINANCE MEDICAL UNIT FOR ITALY

Provided with funds from the Congregational Christian and Unitarian churches, the first privately financed American medical unit organized to aid war stricken Italians will be ready for action in a few months. Dr. Elmer L. Sevringhaus, professor of medicine at the University of Wisconsin, recently disclosed that the two denominations have allocated \$100,000 for the unit and promised "additional funds when needed." The unit will include eight physicians, two dentists, two laboratory technicians, one dietitian and two executive officers. Dr. Maurice B. Visscher of the University of Minnesota is aiding Dr. Sevringhaus in organizing the unit.

The purpose of the mission will be to study control of epidemics and the spread of tuberculosis among undernourished people, as well as diseases of underfed children.

RUSSIAN WAR RELIEF, INC.

Almost \$23,000,000 in cash and goods was contributed by the American people during 1944 to Russian War Relief, making a total of \$46,246,240 received by the agency since its inception a little more than three years ago. Eugene D. Kisselev, Soviet consul general, recently expressed the appreciation of his government and people for America's aid through Russian War Relief. Mr. Edward C. Carter is president of Russian War Relief, Inc. (5 Cedar Street, New York 5).

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Services:

(Continuation of list in THE JOURNAL, February 17, page 404)

CALIFORNIA

Mount Zion Hospital, San Francisco. Capacity, 193; admissions, 5,333. Dr. J. A. Katzive, Director (resident—roentgenology, disqualified for military service).

NEW JERSEY

St. Francis Hospital, Trenton. Capacity, 355; admissions, 8,795. Sister M. Regulata, R.N., Superintendent (interns, residents). North Hudson Hospital, Weehawken. Capacity, 191; admissions, 2,938. Dr. J. Lawrence Evans, Administrator (interns).

NEW YORK

Wyoming County Community Hospital, Warsaw. Capacity, 142; admissions, 2,581. Dr. C. F. Mignin, Superintendent (residents—mixed service, July 1).

OHIO

Deaconess Hospital, Cincinnati. Capacity, 198; admissions, 4,399. Mr. William H. Frersing, Superintendent (2 interns, July 1; 2, August 1). Lima Memorial Hospital, Lima. Capacity, 182; admissions, 5,300. Mr. Leslie O. Fonkalsrud, Administrator (3 interns, July 1).

PENNSYLVANIA

Hahnemann Hospital, Philadelphia. Capacity, 616; admissions, 10,548. Dr. R. W. Plummer, Medical Director (residents—medicine, surgery, pediatrics, anesthesia, disqualified for military service).

TEXAS

Methodist Hospital, Dallas. Capacity, 225; admissions, 8,193. Dr. C. W. Sensesbach, Medical Director (interns, residents, now and July 1). St. Paul's Hospital, Dallas. Capacity, 300; admissions, 12,444. Sister M. Antonia, R.N., Superintendent (interns, resident, now and July 1).

WISCONSIN

Luther Hospital, Eau Claire. Capacity, 176; admissions, 4,006. Mr. N. E. Hanshus, Manager (interns, March 15 to July 15).

WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

Induction Center, Grand Central Palace, New York: Clinical Implications in the Newer Knowledge of the Shock Syndrome, Dr. Samuel Standard, March 2; Early Diagnosis of Syphilitic Heart Disease, Dr. Edwin P. Maynard Jr., March 9 (to be repeated March 16); Report on Anesthesia Practice in the Present War, Dr. E. A. Rovenstine, March 23.

Newton D. Baker General Hospital, Martinsburg, W. Va.: Penetrating Wounds of the Abdomen, Dr. Arthur M. Shipley, March 5; Diagnosis and Treatment of Cardiovascular Conditions Peculiar to Military Life, Dr. Louis Hamman, March 5; Experiences with Malaria, Col. Paul F. Russell, March 19; Diagnosis of Diarrheal Diseases, Lieut. Col. Hardy Kemp, March 19.

A. A. F. Regional Hospital, Langley Field, Virginia: Preservation and Restoration of Function of the Extremities, Dr. W. T. Graham, March 30; Psychiatry, Dr. R. Finley Gayle, March 30.

Tilton General Hospital, Fort Dix, New Jersey: X-Ray Analysis of Fractures, Dr. W. Edward Chamberlain, February 26.

Percy Jones General and Convalescent Hospital, Battle Creek, Mich.: Surgical Diseases of the Stomach, Dr. Warren H. Cole, February 26.

Station Hospital Truax Field, Wisconsin: Heart Disease, Dr. Chester M. Kurtz, February 28; Arthritis, Dr. Milton C. Borman, March 14; Peripheral Vascular Diseases, Dr. Geza de Takats, March 28.

Station Hospital, Rosecrans Field, St. Joseph, Mo.: Gastrointestinal Diseases, Dr. R. C. Davis, March 8; X-Ray Diagnosis, Dr. Ira H. Lockwood, March 8.

Birmingham General Hospital, Van Nuys, Calif.: Thoracic Surgery, Dr. John Jones and Lieut. Comdr. J. E. Dailey, February 28; Chemotherapy, Dr. Clinton Thienes and Lieut. Comdr. Charles Bingham, March 14; Coccidioidomycosis, Drs. E. M. Butt and Ray A. Carter, March 28.

Station Hospital, U. S. Naval Air Station, North Island, San Diego, Calif.: Pathogenesis of Rheumatic Fever, Lieut. Comdr. Robert W. Huntington Jr., March 2; Clinical Aspects and Treatment of Rheumatic Fever, Lieut. Comdr. George C. Griffith, March 2; Internal Derangements of the Knee, Dr. Jolin Wilson, March 16.

Wakeman General Hospital, Camp Atterbury, Indiana: Conditions Affecting Glucose Metabolism, Drs. Franklin B. Peck and C. L. Rudesill, February 28.

Billings General Hospital, Fort Benjamin Harrison, Indiana: High Blood Pressure, Drs. Kenneth G. Kohlstaedt and Robert L. Glass, February 28.

Regional Hospital, Camp Haan, Calif. (March Field will meet with Camp Haan): Anesthetic Morbidity, Capt. E. H. Warnock, March 6; Some Practical Pointers in Anesthesia, Lieut. John E. Skevis, March 6.

Torney General Hospital, Palm Springs, Calif. (medical staffs of U. S. Navy convalescent hospitals at Banning and Beaumont will meet with this group): Recent Developments in Surgical and Public Health Antisepsis, Dr. Frederick J. Moore, March 6.

A. A. F. Regional Hospital, Santa Ana Air Base, Santa Ana, Calif.: Pathogenesis of Rheumatic Fever, Lieut. Comdr. Robert W. Huntington Jr., March 6; Clinical Aspects and Treatment of Rheumatic Fever, Lieut. Comdr. George C. Griffith, March 6.

U. S. Naval Hospital, Corona, Calif.: Atypical Pneumonias, Dr. W. E. Macpherson, March 8; X-Ray Observations, Lieut. A. B. Phillips, March 8.

U. S. Naval Hospital, Oceanside, Calif.: Blood Plasma and Substitutes, Lieut. Col. R. M. Jones, March 8; Water Balance, Major Edward Schwartz, March 8.

United States Naval Air Training Station, San Diego, Calif.: Pathogenesis of Rheumatic Fever, Lieut. Comdr. Robert W. Huntington Jr., March 2; Clinical Aspects and Treatment of Rheumatic Fever, Lieut. Comdr. George C. Griffith, March 2.

Station Hospital, Camp Cooke, California: Classification and Diagnosis of Anemias, Dr. Alvin Foord, March 7.

Hoff General Hospital, Santa Barbara, Calif.: Classification and Diagnosis of Anemias, Dr. Alvin Foord, March 7.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Feb. 19, 1945.

War Production Board Aids Medical Research

In addition to other technical accomplishments, the Office of Production Research and Development of the War Production Board has chalked up records in the medical field. Among its efforts has been assistance in the building of DDT insecticide plants, in the production of penicillin, in the conservation of eyesight in industry, in the synthesis of quinidine and in speeding up the manufacture of dental burrs. In regard to penicillin, the OPRD has coordinated the technological aspects of the conversion from laboratory to plant processes in penicillin manufacture. It is estimated that this has advanced the plant program of penicillin production about three months. Three new strains of penicillin mold have been developed in OPRD projects. These strains are capable of producing two to three times as much penicillin as those originally used. Millions of dollars in plant construction are said to have been saved by these strains. A practical and efficient synthesis of quinidine, used for certain heart diseases, was developed with quinine as the raw material. The production of synthetic quinidine is important because of the current shortage of imported quinidine. A new and faster machine for manufacturing dental burrs was also developed by an industrial concern under OPRD sponsorship.

Commissioning Male and Female Nurses Proposed

The House Military Affairs Committee has tentatively given its stamp of approval to making male as well as female nurses eligible for commissions as second lieutenants. It also favors a proposal of Representative Sparkman, Democrat of Alabama, to include not only registered nurses but all those who are eligible for commissioning as nurses in proposed draft legislation. It is also in support of a move to raise the minimum age for drafted nurses from 18 to 20 years, with the maximum age limit remaining at 45. An amendment will probably be attached to the May nurse draft bill making graduates of the Cadet Nurse Corps liable for induction first. These items were considered by the committee in closed session.

Navy Calls for 3,000 to 4,000 More Nurses

As its assaults come nearer to Tokyo and the Japanese-occupied Asiatic mainland, the Navy has appealed for 3,000 to 4,000 more nurses to care for wounded men and to train thousands of corpsmen (both men and women). The Navy's nurse recruits, starting as ensigns, will join the corps of 9,000 nurses already serving. Navy nurses are on duty here and overseas, on hospital ships, transports and ambulance planes and in base hospitals. In the Navy recruits must have graduated from high school, be from 22 to 28 years of age or up to 40 in the reserve corps, and not be married, widowed or divorced. First duty will be to supervise personnel of little or no previous nursing experience.

Capital Contributes \$250,000 to Poliomyelitis Fund

Commissioner John Russell Young reveals that Washington contributed approximately \$250,000 to the infantile paralysis fund campaign. The District of Columbia's ranking official is now busy receiving on behalf of the Washington fund substantial contributions toward the mile of dimes campaign. Large amounts were raised through the President's birthday balls in Washington and throughout the nation.

Extra Medical Supplies Flown to Germany

Red Cross headquarters reveals here that extra medical supplies from Geneva are being rushed to prisoner of war camps in western Germany to prevent epidemics. The transfer to the west by Germany of thousands of prisoners in the path of the

advancing Russian army has caused extreme overcrowding. Increased shipments from the United States include a load of typhus vaccine in refrigerated cases, flown by air express to Europe. A special staff has been set up in the American Red Cross prisoners of war relief section to expedite the work.

Artificial Limb Production to Be Standardized

Army, Navy and Veterans Administration officials conferred in Chicago with manufacturers of artificial limbs to agree on standardized limbs to be issued to disabled service men by the three agencies. The Veterans Administration reports that standardization will simplify the making of repairs and replacements. Its contracts allow for the payment of \$290 for full length metal legs in amputations where the hip is disarticulated, \$165 in the usual below knee amputation and \$215 in the usual thigh amputation.

Rheumatic Fever Threat Feared in Washington

Dr. Bernard J. Walsh, District Health Department cardiologist, has warned that many more children are likely to be attacked this spring by rheumatic fever, a crippling disease, owing to extreme overcrowding in the capital. Already more than 150 children are registered in the Crippled Children's Clinic at Gallinger Hospital suffering from rheumatic heart disease as a result of the fever.

Dispensary Facilities in Government Buildings

Properly situated first aid and dispensary facilities will be included in government buildings built after the war, the Federal Interdepartmental Safety Council reports. A plan has been drawn whereby agencies planning new buildings can specify these requirements in cooperation with the U. S. Public Health Service.

Medical Legislation

MEDICAL BILLS IN CONGRESS

Changes in Status.—The Senate Committee on Education and Labor has scheduled hearings on S. 191, the Hill-Burton hospital construction bill, to begin February 26. H. J. Res. 100 has passed the House and has been reported to the Senate, proposing an additional appropriation of \$184,000 for the United States Public Health Service. This appropriation is to be utilized in the leasing and repair of the 300 bed hospital facility known as the Neponsit Beach Hospital at Rockaway Beach, Long Island, from the city of New York. The city has agreed to lease the hospital for the official duration of the war at a rental of \$1 for the first year and at the rate of \$30,000 per year thereafter. The purpose of the lease is to permit the removal of tuberculous patients from Staten Island Marine Hospital and thus enable that hospital to meet such demands as may be made on it as long as the war continues. The House Committee on Military Affairs has been conducting hearings on H. R. 1284 and H. R. 1666, proposing the drafting of nurses. A bill will be reported shortly, it is understood. S. Res. 62 has been reported to the Senate, proposing an additional appropriation of \$15,000 to permit the Pepper Subcommittee on Wartime Health and Education to continue its study and survey of the distribution and utilization of health personnel, facilities and related services.

Bills Introduced.—S. 535, introduced by Senator Myers, Pennsylvania, proposes to prevent pollution of the waters of the United States and to correct existing water pollution. The bill would create a National Board of Water Pollution Control, consisting of the Secretary of the Interior, Secretary of Agriculture, Secretary of War, Secretary of the Navy, Surgeon General of the Public Health Service and the chairman and ranking minority member of the Senate Committee on Com-

merce and of the House Committee on Rivers and Harbors. H. R. 1362, introduced by Representative Crosser, Ohio, proposes to amend the Railroad Retirement Acts and the Railroad Unemployment Insurance Act so as to provide, among other things, sickness and maternity benefits for employees. H. R. 2044, introduced by Representative Weiss, Pennsylvania, proposes to enact a United States Physical Fitness Act and to establish a United States Commission of Physical Fitness to carry out the purposes of the act. H. R. 2066, introduced by Representative De Lacy, Washington, and H. R. 2133, introduced by Delegate Bartlett, Alaska, propose to authorize the Secretary of the Interior to locate, establish, construct, equip and operate a hospital for the insane of Alaska. H. R. 2075, introduced by Representative Reece, Tennessee, provides that any ex-service person shown to have had a tuberculous disease of a compensable degree shall receive, under certain circumstances, not less than \$62.50 per month. H. R. 2139, introduced by Representative Gathings, Arkansas, would authorize the Federal Works Administrator to cause hospital projects initiated under the Lanham Act to be completed and equipped. H. R. 2206, introduced by Representative Harris, Arkansas, contemplates the establishing of a presumption of service-connected disability in the case of disease or injury existing within five years after discharge from service in the armed forces during the present war.

STATE LEGISLATION

Arkansas

Bill Introduced.—H. 249 proposes that no person "legally registered as a member of any trade or profession" shall be required to reregister or to pay a fee for same unless his license has been revoked for legal cause.

California

Bills Introduced.—S. 1010 proposes to condition the manufacture or sale of vitamins on the possession of a license for that purpose issued by the state board of health. The standards of purity of vitamins to be enforced by the board are to be as set out in the United States Pharmacopeia, the Homeopathic Pharmacopeia of the United States and the National Formulary. A. 1344 proposes, whenever it is relevant to the prosecution or defense of an action, that the court may order any party whose paternity is relevant to the issues in the action to submit to blood grouping tests. The results of those tests are to be admissible in evidence if definite exclusion of paternity of the person tested is indicated. A. 1427 proposes to add to the Health and Safety Code a division 22, entitled "Dangerous Drugs," which proposes to prohibit the sale or distribution of any dangerous drug except on the written prescription of a licensed physician, dentist, chiroprapist or veterinarian. Dangerous drug is defined to mean any hypnotic drug, aminopyrine, amphetamine, cinchophen, diethylstilbestrol, ergot, oils of croton, rue, savin or tansy, sulfanilamide and thyroid. A. 1678, to amend the medical practice act, proposes to authorize the board of medical examiners to issue a herb practitioner's certificate.

Connecticut

Bills Introduced.—S. 238 proposes to enact a separate massage practice act and to authorize local health officers to license persons so to practice. S. 524 proposes to direct the governor to appoint a commission of five to study and investigate the subject of health insurance and to report its findings and recommendations to the next session of the general assembly. H. 601 proposes to set up a system of compulsory health insurance. H. 999 proposes to authorize the Connecticut Hospital Service, Inc., to enter into contracts with and to act as agent for any medical service corporation.

Georgia

Bills Introduced.—H. 175, to amend the narcotic drug act, proposes so to define narcotic drugs as to include isonipecaine, which, the bill provides, means "the substance identified chemically as 1-methyl-4-phenyl-piperidine-4-carboxylic acid ethyl ester, or any salt thereof whether known as Demerol or by whatever other trade name identified." H. 122, to supplement

the medical practice act, proposes to authorize the state board of health to make such reasonable rules and regulations concerning the certification of midwives and the practice of midwifery as it may deem necessary and to provide that those rules and regulations shall have the effect of law. A person so licensed by the board of health is to be entitled legally to practice midwifery in cases of normal labor and in no other and may not in any case use instruments of any kind or assist labor in any artificial, forcible or mechanical manner or attempt to remove adherent placentas or to introduce either fingers or any other object whatsoever into the vagina.

Idaho

Bill Introduced.—H. 119, to amend the laws relating to the practice of chiropractic, proposes, among other things, that in appointing members of the board of chiropractic examiners the governor must confine his choice to persons nominated by the state chiropractors association.

Illinois

Bills Introduced.—H. 95 proposes to permit townships to operate public nonsectarian hospitals if authorized by the electors of the township. H. 103 proposes to prohibit the operation of a "private hospital" unless licensed by the Department of Registration and Education. Private hospital means "every private hospital, nursing home, resting home and sanitarium, for persons requiring care, treatment or nursing, by reason of sickness, injury, deformity or other disability."

Indiana

Bills Introduced.—S. 193 proposes to enact a separate practice act relating to naturopathy and physiotherapy and to create a board of natural therapeutic physicians to examine and license applicants for licenses to practice in the fields indicated. H. 308 proposes to authorize Indiana University to establish a department of public health and to offer courses of instruction in that field. H. 390 proposes to prohibit the operation of a hospital without a license from the state board of health. Hospital is defined as "any institution, place, building or agency represented and held out to the general public as ready, willing and able to furnish care, accommodations, facilities and equipment for the use, in connection with the service of a physician, of persons who may be suffering from deformity, injury or disease or from any other condition for which medical or surgical services would be appropriate for care, diagnosis or treatment." The term does not include convalescent homes, boarding homes, homes for the aged or hospitals for the insane or for those suffering from other mental conditions. H. 449 proposes to enact what apparently is the uniform vital statistics act providing for the collection and compilation of records of births and deaths.

Iowa

Bill Introduced.—S. 280, to amend the laws relating to the practice of chiropractic, proposes that such a license shall not authorize the holder to prescribe, furnish or sell vitamins or to employ in his practice x-ray machines for any purpose.

Kansas

Bill Introduced.—H. 140 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a certificate of a physician, based on physical examination and on serologic tests, that the party is not infected with syphilis, or, if so infected, the disease is not in a stage which is communicable to a marital partner.

Maine

Bills Introduced.—S. 211 proposes that, when a patient being treated by a physician for venereal disease discontinues treatment while capable of transmitting the disease to others, the physician shall report the name and address of the person at once to the bureau of health. S. 212 proposes to condition school attendance on the presentation by the child of evidence that he or she has been inoculated with the virus of cowpox to prevent smallpox and, if the child is under 12 years of age,

on the presentation also of a physician's certificate that the child has been immunized against diphtheria. Evidence of such inoculation and immunization may be waived on the written statement of a physician that the condition of the child is such that inoculations would be injurious to health or on the presentation of a written statement from the parents that they object to such inoculations because of religious belief. S. 215 proposes, in effect, to permit osteopaths to sign certificates for committing persons to state institutions and to participate in health services under the department of health and welfare the same as physicians of other schools of medicine. The bill also proposes to dub practitioners of osteopathy as "osteopathic physicians." H. 844 proposes to direct the department of health and welfare to survey all existing public and private hospitals and health centers in the state, to evaluate the sufficiency of existing facilities to supply necessary medical and hospital care to the people, and to accept any available federal or other funds for public health services of all kinds. H. 843 proposes that no school employee shall assume the performance of his duties until he has filed with the appropriate school committee a physician's certificate that he is free from communicable and infectious diseases.

Massachusetts

Bills Introduced.—H. 858, to amend the medical practice act, proposes to make eligible for examination and licensure persons who matriculated at Middlesex University during 1941, have graduated therefrom and who subsequently have served as interns in a hospital. H. 964 proposes to enact what appears to be the uniform vital statistics law respecting the registration, compilation and preservation of births, deaths and stillbirths. H. 1511 proposes that the state establish and operate the Massachusetts university of medicine to furnish instruction in the practice of medicine.

North Carolina

Bill Introduced.—H. 229 proposes to authorize the state board of health to promulgate rules and regulations governing the sanitation of all private hospitals and to inspect the premises of such institutions to see that they conform to the regulations so promulgated.

North Dakota

Bills Introduced.—S. 127 proposes to make it unlawful for any insurance company doing business in the state to issue any sickness or accident insurance policy wherein the insured is denied the right to consult or employ the services of any licensed practitioner of his choice. Such insurance companies are to be required to recognize the certificate of any licensed practitioner "the same as that of any licensed physician and surgeon." H. 187 proposes to authorize the formation of a nonprofit medical service corporation to operate medical service plans whereby medical service is provided at the expense of the corporation to subscribers needing it. H. 236 proposes that every contract by which any one is restrained from exercising a lawful profession is to that extent void.

Oregon

Bills Introduced.—S. 151, to amend the medical practice act, proposes to increase to \$10 from \$5 the annual registration fee required of licensed physicians and osteopaths. H. 307 proposes that the person in charge of any conveyance in which or by which another is injured, unless instructed otherwise by the injured person, shall immediately take the injured person to the nearest hospital for attention. The bill further provides that the temporary treatment of an injured person under emergency conditions by an unlicensed person shall not constitute the unlawful practice of medicine.

Pennsylvania

Bills Introduced.—S. 239 proposes to authorize the sexual sterilization of certain socially inadequate inmates of state institutions. H. 377 proposes to prohibit any person from experimenting or operating in any manner whatsoever on any living dog for any purpose other than the healing or curing of such dog of physical ailments.

South Dakota

Bill Introduced.—S. 160 proposes to authorize the formation of nonprofit medical service plan corporations to operate medical service plans under which medical services may be rendered to subscribers and covered dependents by licensed physicians at the expense of the corporation in consideration of periodic prepayments made prior to the occurrence of the condition calling for the rendition of medical services.

Tennessee

Bill Introduced.—S. 522 proposes to authorize the formation of nonprofit medical service plan corporations to operate medical service plans under which medical services may be rendered to subscribers and covered dependents by a licensed physician at the expense of the corporation in consideration of periodic prepayments made prior to the occurrence of the condition called for the rendition of medical service.

Utah

Bill Introduced.—H. 176 proposes to make it unlawful for any person, firm or corporation to dispense any corrective eye glasses, lens or spectacles except on the prescription of a licensed physician or optometrist.

Washington

Bills Introduced.—S. 138 proposes to enact a separate act regulating the practice of massotherapy and to create a committee of examiners in massotherapy to examine and license applicants for a license to practice massotherapy. The bill proposes to define massotherapy as "the method, art or science of treating the human body for hygienic or remedial purposes to maintain health and to establish a normal condition of the body and shall include all massage manipulations, passive and active remedial gymnastics and relaxing movements and manipulations with the hands or with any other agency or instrumentality designed to accomplish massage manipulations or gymnastics, or by mechanical gymnastics to promote physiological action to bring about a normal condition of health and restore bodily functions to a normal condition." S. 149 proposes to authorize the formation and operation of nonprofit hospital service corporation to provide hospital service plans whereby hospital care may be provided at the expense of the corporation to subscribers to such plans. S. 171 proposes to impose a liability on all hospitals, whether charitable or otherwise, for damages that may result to patients, whether free or pay, by reason of the negligent conduct of hospital employees.

Official Notes

LARGEST NETWORK IN AMERICAN MEDICAL ASSOCIATION BROADCASTING HISTORY

A report just received from the National Broadcasting Company indicates that Doctors Look Ahead is now being broadcast on 123 National Broadcasting Company stations from coast to coast and from border to Gull. Except for certain radio "dead-spots" where listening is interfered with by atmospheric or electrical phenomena, Doctors Look Ahead should be available to listeners everywhere.

This wide acceptance of a nonrevenue program by local stations is evidence of its high acceptability to local program directors who understand the needs and preferences of their listening audiences. A nonrevenue program such as Doctors Look Ahead, although furnished to all local stations by the network, may be ignored by the local station in favor of its own local programs. Unless the net program is of high quality, this is frequently what happens. The next three subjects for Doctors Look Ahead are as follows:

February 24: The Discharged Soldier.
March 3: Nutrition at Home (Dr. G. K. Anderson).
March 10: Rheumatic Fever.

The Bureau of Health Education, which directs Doctors Look Ahead, will welcome suggestions from listeners.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CONNECTICUT

State Meeting Canceled.—The Connecticut State Medical Society announces the cancellation of its meeting which was scheduled to be held in Hartford, May 1-3.

Position Available as Health Consultant.—Applications are being accepted by the state of Connecticut, Hartford, for examination to fill the position now available as local health consultant. Applications will be accepted until March 31. The applicant must be eligible for a license to practice medicine and surgery in Connecticut and must have not less than five years' employment in public health work including experience as health officer of a municipality, county or district; or similar experience of at least three years' duration and completion of graduate training in public health work or an equivalent of the two. Connecticut residence requirement is waived for the examination. Candidates must be citizens of the United States. The salary range is from \$5,100 to \$5,700 a year. Additional information may be obtained from the Personnel Department, State Capitol, Hartford.

ILLINOIS

Physician Starts Forty-Fifth Year as Coroner.—Dr. Joseph B. Schreiter, Savanna, recently started his forty-fifth year as coroner of Carroll County. Dr. Schreiter, who graduated at Rush Medical College, Chicago, in 1896, was named coroner in 1900, serving in the position ever since with time off to go overseas in the first world war.

Tuberculosis Patch Test.—Hal Hall, Ed.D., superintendent of the Campus Laboratory Schools, writes to correct information that he submitted to THE JOURNAL concerning the series of patch tests that were given to 150 students in the Allyn Elementary School, Carbondale. Mr. Hall states that 1 active case reported should have been "arrested" case of tuberculosis (THE JOURNAL, February 10, p. 345).

Charles Siler Named Health Commissioner of Oak Park.—Dr. Charles A. Siler, a practicing physician in Oak Park since 1929 and formerly a medical missionary in China, has been appointed health commissioner of Oak Park, effective February 15. He succeeds Dr. Gilbert P. Pond, who resigned to accept a commission in the U. S. Navy. Dr. Siler graduated at the University of Kansas School of Medicine, Lawrence-Kansas City, in 1910, receiving also a degree from Rush Medical College, Chicago, in 1922.

Chicago

Department of Registration Moves.—The state department of registration and education moved, January 31, to the second floor of the Burnham Building, 160 North La Salle Street. The department, whose telephone number is now Andover 4755, was formerly housed at 600 South Michigan Avenue.

The Edwin Kretschmer Memorial Lecture.—The fourth Edwin R. Kretschmer Memorial Lecture will be delivered on April 27 at the Palmer House by Dr. William Bloom, professor of anatomy, University of Chicago School of Medicine, on "Experiments on Hematopoiesis." The lecture is a project of the Institute of Medicine of Chicago.

Pathology Professorship Created.—A professorship in pathology is one of four new professorships created at Northwestern University in honor of the late Mrs. Emma H. Morrison. Mrs. Morrison willed \$1,750,000 to the university when she died four years ago to create the "Charles E. and Emma H. Morrison Memorial Fund" with the stipulation that the university use the bequest in the manner it deemed best. The other professorships include one each in zoology, English and marketing.

Society News.—Dr. Francis W. Carruthers, professor of orthopedic surgery, University of Arkansas School of Medicine, Little Rock, among others, will address the Chicago Orthopaedic Society, March 9, on "Anatomical and Functional Reductions of Fractures of the Pelvis." Dr. Lee M. Cattell was among the speakers who addressed the February 9 meeting, his subject being "Penicillin Therapy in Acute Osteomyelitis in Children: Ten Consecutive Cases."—Dr. William

D. Stroud, Philadelphia, will address the North Side Branch of the Chicago Medical Society at the Drake Hotel, March 1, on "Heart Disease."—Col. Irving S. Wright, M. C., addressed the Chicago Heart Association, February 15, on "Cardiovascular Highlights of the War." Among others, Dr. Edwin J. Blonder will address the Chicago Laryngological and Otological Society at the Continental Hotel, March 5, on "Visualization of Otic Brain Abscess."

KANSAS

Menninger Institutions Reorganized.—At a recent special meeting of the stockholders of the Menninger Sanitarium corporation, Topeka, a resolution was approved to dissolve the corporation as of next June 30 and to transfer its assets to the Menninger Foundation. The reorganization will promote the expansion program entailing more than \$1,250,000 and would, when permissible, allow a long considered consolidation of activities in education, treatment and research. The transfer in assets will involve buildings, equipment, grounds and other facilities of the clinic on West Sixth Street totaling \$325,000, of which \$200,000 will be a personal contribution of Drs. Charles F., Karl A. and William C. Menninger and their colleagues. According to the Topeka *State Journal*, an earning capacity of between 70 and 80 thousand dollars annually, along with the good will and prestige of the organization, which has completed twenty-five years, will be additional benefits. Treatment of a larger number of patients, both adults and children, without regard to their financial status, will be a major aim of the foundation, for which a psychiatric hospital unit costing \$750,000 is contemplated. Additional buildings trebling the capacity of the Southard school would cost \$250,000, and a psychosomatic hospital unit for correlation of psychiatric and medical studies was projected at \$150,000. A fund of \$100,000 a year would permit low cost treatment for patients with small incomes. Estimates for postgraduate education, including training for young psychiatrists, physicians returning from military service, nurses, teachers and others, were placed at \$105,000; for research \$149,000, for scholarships for promising children \$30,000, and for publications \$5,000. The Menninger project is an original partnership of the father, Dr. Charles Frederic Menninger, and his two sons and includes a hospital on a 30 acre tract, the Southard school established in 1925 for the treatment of children, a library to further teaching and research and a department of psychology established by Junius F. Brown, Ph.D., professor of psychology, University of Kansas, Lawrence, and continued by David Rapaport, Ph.D. The Menninger Foundation was organized in 1941 (THE JOURNAL, Jan. 10, 1942, p. 154).

MARYLAND

Medical Students Required to Take Course in American History.—Drastic changes in the University of Maryland curriculum, under which all students will be required to take courses in American history, American literature and American government and its philosophy, will go into effect next school year, newspapers reported, February 7. Medical, engineering and law students, as well as those in the liberal arts colleges, will be required to take the courses, that the university may "turn out men and women graduates with a better understanding of the American way of life."

MASSACHUSETTS

Personal.—Dr. Dora E. Brault, formerly assistant health officer in Prince George County, Md., for the U. S. Public Health Service, has been appointed an epidemiologist with the Massachusetts Department of Public Health, Boston.

Henry Pollock Retires as Superintendent of the Massachusetts Memorial Hospitals.—On February 1 Dr. Henry M. Pollock retired as superintendent of the Massachusetts Memorial Hospitals, Boston, a position he had held for thirty years. He has been succeeded by Dr. Leverett S. Woodworth, associate director of Harper Hospital, Detroit. Dr. Pollock graduated at the University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, in 1897 and was appointed to the Massachusetts Memorial Hospitals in 1915. Dr. Woodworth graduated at Cornell University Medical College, New York, in 1926.

Clinic Reorganized.—The Lawrence Clinic has recently been reorganized. According to the *New England Journal of Medicine* Capt. Glenmore F. Clark (MC), U. S. Navy retired, will direct the clinic, and arrangements have been made with the executive committee of the Lawrence General Hospital,

composed of Drs. Harold R. Kurth, Lawrence; Rolf C. Norris, Methuen; John J. Hartigan, Andover; Z. William Colson, Lawrence; Richard J. Neil, Methuen, and Percy J. Look, Andover, whereby the staff of the Lawrence General Hospital will act as the staff of the Lawrence Clinic. When the work of the clinic increases and more physicians and dentists become available, the program of services will be modified accordingly.

MICHIGAN

St. Mary's Hospital to Observe Centennial.—On May 16-17 St. Mary's Hospital, Detroit 26, will celebrate its one hundredth anniversary. The hospital urges former interns and residents to communicate with it in order that they may be duly recognized during the program.

Secretaries Conference and School of Information.—The annual secretaries conference and school of information sponsored by the Michigan State Medical Society was held at the Book-Cadillac Hotel, Detroit, January 28. Among the speakers were:

- Dr. William W. Bauer, Chicago, Director, Bureau of Health Education, American Medical Association, First Things First.
- John F. Hunt, Chicago, executive, Foot, Cone & Belding, The Selling Job of the Physician—What Must Be Done Now.
- Edward J. Berman, Chicago, administrator, National Physicians Association, Medical Service, The Program of the American Medical Association.
- Paul D. Bagwell, East Lansing, head, speech department, Michigan State College of Agriculture and Applied Science, Proposed Amendment to the Constitution of the State of Michigan.
- Dr. Joseph S. Lawrence, Washington, D. C., director, Washington Office, Council on Medical Service and Public Relations, American Medical Association, The Work of the Washington Office of the Council on Medical Service and Public Relations.
- Dr. Edward F. Sladek, Traverse City, chairman of the council of the state society, Physical Rehabilitation Program of the Federal Government.

MINNESOTA

Personal.—The public library at Madelia has been presented with a number of books dedicated to the memory of Dr. William J. McCarthy. The donor was A. L. Sperry, Owatonna attorney, who was a lifelong friend of Dr. McCarthy.

Memorial to Dr. Ernest Meland.—A group of professional friends and former patients of the late Dr. Ernest L. Meland are contributing to a fund to create a memorial in his honor, which will probably take the form of a fellowship or research project in urology at the University of Minnesota Medical School, Minneapolis. A temporary committee is in charge of collecting the fund and will turn the money over to the Minnesota Medical Foundation, a perpetual, charity trust, with the recommendation for the end to which it might be used. The project is not sponsored by the Hennepin County Medical Society but represents a desire on the part of personal friends and former patients to create a memorial in his honor.

Physician Charged with Fraudulent Prescription Writing.—On January 16 Dr. Joseph A. Duclos, Henderson, pleaded guilty at the U. S. District Court at Mankato to an indictment charging three violations of the Harrison Narcotic Law. In the first count the physician was charged with writing a fraudulent prescription for one Gust C. Lange, a member of the federal bureau of narcotics, the prescription calling for twenty ¼ grain morphine sulfate hypodermic tablets and being written for Lange under the name of Harold Erickson. The second count charged the physician with a similar violation and the third was selling one hundred ¼ grain morphine sulfate tablets to the same informer for the government for \$25. The defendant received a suspended sentence with the warning that any further violation of the narcotic law will result in a prison sentence.

MISSOURI

State Meeting Canceled.—The Missouri State Medical Association announces the cancellation of its meeting which was scheduled to be held in St. Louis, April 22-24.

MONTANA

Tularemia Occurs in Chipmunk.—The recovery of *Pasteurella tularensis* from a chipmunk, *Eutamias* sp., adds this rodent to the already long list of animals of native fauna in which tularemia occurs spontaneously. According to *Public Health Reports*, January 5, the chipmunk from which the isolation was made had been captured alive in June 1939 at a summer camp on Mica Bay, Lake Coeur d'Alene, Kootenai County, northern Idaho. It died two days later and the carcass was forwarded to the Rocky Mountain Laboratory, Hamcass. The isolation of the bacterium was from the heart ilton. The isolation of the bacterium was from the heart blood, taken just before death, of two guinea pigs which had been injected with a pooled suspension of spleen, liver and lung tissue.

NEW JERSEY

State Society Moves.—The executive and editorial offices of the Medical Society of New Jersey have been moved to the society's new home, 315 West State Street, Trenton (THE JOURNAL, Dec. 16, 1944, p. 1040).

Health Talks.—The Newark Museum opened a series of "Timely Talks on Health" January 11 with Dr. Benjamin I. Saslow, Newark, discussing "Nutrition in Wartime." Dr. Arthur J. Ellis, Newark, lectured January 18 on "Nervous and Mental Diseases in Military Personnel," Dr. Henry C. Barkhorn, Newark, January 25 on "Your Ear" and Dr. Ellis L. Smith, Belleville, February 1 on "Tropical Diseases."

NEW YORK

New Bureau of Medical Care Insurance.—The *New York State Journal of Medicine* announces the appointment of Mr. George P. Farrell, Buffalo, as director of the newly created bureau of medical care insurance of the state medical society. Mr. Farrell will have offices at 292 Madison Avenue, New York. The bureau will carry forward the practical business of the establishment on a broad base of prepaid medical care insurance in the state. Mr. Farrell had formerly served as enrolment supervisor of the Western New York Medical Plan, Inc., and the Western New York Hospital Service, Inc., Buffalo.

Women Physicians Oppose Chiropractic Bill.—The Women's Medical Society of New York, meeting in executive session February 3 at the New York Hospital, unanimously adopted a resolution opposing the chiropractic bill now before the state legislature as "detrimental to the health and welfare of the people of the state of New York." According to the *New York Times* the society's objections to the bill, which would license chiropractors in the state, were contained in a five point petition now being circulated among its members. It maintains that the bill, if passed, would permit unqualified persons to diagnose and treat illness and that the educational standards proposed are greatly inferior to those required of physicians and osteopaths.

Neuropsychiatric Clinic to Be Created at Rochester Medical School.—The establishment of a neuropsychiatric clinic at the University of Rochester School of Medicine and Dentistry, Rochester, has been made possible by a gift of securities to the university by Mrs. Helen W. Rivas of New York City and Le Roy, N. Y. Of the total gift a portion is designated for construction and equipment of a building to house the clinic as a unit of the School of Medicine and Dentistry and of Strong Memorial Hospital. A trust fund has been set up to operate and maintain the clinic. The new unit will be constructed as soon as can be practicable in view of present building conditions. In the meantime a committee of the medical school faculty will survey the field throughout the country to select a man to head the clinic so that he may participate in preparing the plans for the physical plant and the staff organization. It is contemplated that the clinic will be used for the study and care of persons having functional nervous disorders rather than for those with extreme mental ailments. Provision will be made for ample laboratory space for active research and investigation. It is planned to have beds for from 50 to 60 inpatients, and extensive use of the clinic for ambulatory patients is anticipated. Income from the endowment fund set up for the clinic will be paid to the university and accumulated to finance the project.

New York City

Volunteer Corps Organized for Cancer Work.—A new volunteer corps to help in the treatment of cancer patients, both at home and in hospitals, began training February 6 under a program that may be extended to other parts of the country, the *New York Times* recently reported. Known as the Red Cross Field Army nursing aides, the unit will take the Red Cross Home nursing course along with special lectures on cancer.

Public Health and the Doctors.—On February 7 the *New York Times* presented a forum on "Public Health and the Doctors," with Waldemar Kaempffert, science editor of the *Times*, as moderator. Among the participants were:

- Michael M. Davis, Ph.D., chairman, committee on research in medical economics, State of the Nation's Health.
- Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, Free Clinician and the Fee for Service System.
- Dr. Kingsley Roberts, director, medical administration service, Graduate Practice of Medicine on the Prepayment Plan.
- Hon. Claude Pepper, U. S. Senator from Florida, The Best Way of Meeting the Medical Needs of the Country by Legislation.

The Niles Memorial Lecture.—Dr. Edwin Cowles Andrus, associate professor of medicine, Johns Hopkins University School of Medicine, Baltimore, and chief of the division of medicine committee on medical research, Office of Scientific Research and Development, gave the annual Walter L. Niles Memorial Lecture, February 20, at Cornell University Medical College on "Wartime Medical Research." The lecture is sponsored by Tau chapter of Nu Sigma Nu.

Friday Afternoon Lectures.—Subsequent lectures included in the Friday afternoon series at the New York Academy of Medicine, which opened November 3 (*THE JOURNAL*, Oct. 14, 1944, p. 445 and Dec. 23, 1944, p. 1095), are:

- Dr. Clyde Leroy Deming, New Haven, Hormonal Treatment of Prostatic Malignancy, March 2.
- Dr. Peter Vogel, Pathogenesis, Diagnosis and Treatment of Anemia of the Newborn, March 9.
- Dr. Nathan Rosenthal, Recent Advances in Laboratory Procedure, March 16.
- Dr. Marcy L. Sussman, Scope of Radiology in the Examination of the Upper Gastrointestinal Tract, March 23.
- Dr. A. Benson Cannon, Treatment of Syphilis with Penicillin, April 6.
- Dr. Ephraim Shorr, Recent Developments in Our Knowledge of the Metabolism of Bone in Health and Disease, April 13.
- Dr. Clifford B. Lull, Indications and Contraindications for Caudal Analgesia, April 20.

Forum for Research Workers.—The New York Academy of Medicine will hold a meeting on May 16 to provide a forum in which research workers of New York City and vicinity may present results of original research in clinical medicine. The meeting is being arranged by the committee on medical education of the academy in view of the few meetings of national medical societies before which research work has usually been presented. All research workers of greater New York and neighboring cities within a radius of 100 miles are invited to submit abstracts, not to exceed 200 words in length, of proposed presentations to the secretary of the committee on medical education of the New York Academy of Medicine, 2 East 103d Street, New York 29, not later than April 5.

Hospital Service Raises Age Limit.—Sixty-five instead of 60 has been established as the age limit for enrolment in the Associated Hospital Service of New York on an individual basis, it was announced on February 7. The age limit of 65 still remains in effect for persons who enroll in groups. In a statement to the press Mr. Louis H. Pink, president, stated, "Hospital use goes up rapidly with age and that is why some age limit is necessary. While it is more expensive to provide for older people it is desirable from the social point of view. Older people as a rule do not have the earning capacity of younger ones, and in normal times many are not employed at all. Their hospital needs are greater and their ability to pay is less. We cannot strain our resources to help aging people or be unfair to the public as a whole, but as far as possible we should provide for them. We never drop existing subscribers who continue their membership after 65 years of age, but some limitation is necessary for new subscribers. We are happy that we are able to raise our age limit to 65. Applicants must, of course, be in good health and meet the medical and physical requirements."

OHIO

Hospital Named for Dr. H. Kennon Dunham.—On February 6 the board of trustees of the Hamilton County Tuberculosis Hospital, Cincinnati, changed the name of the institution to the Dunham Hospital in honor of the late Dr. Henry Kennon Dunham, who served as medical director there from 1914 to 1941. After his resignation as medical director he was appointed a member of the board of trustees, serving until his death on April 27, 1944.

Roger Heering Becomes State Director of Health.—Roger E. Heering, Surgeon, U. S. Public Health Service, has been appointed state director of health, his term to run to Jan. 1, 1950. Dr. Heering succeeds Dr. Roll H. Markwith, Columbus, whose term expired Aug. 20, 1944. Mr. James E. Bauman, chief of the legal division in the department, has been acting director of health since Aug. 21, 1944 (*THE JOURNAL*, Oct. 7, 1944, p. 377). Dr. Heering has been assigned to the Ohio Department of Health since 1943 as venereal disease control officer. He served in a similar position for the city of Cincinnati from 1939 to 1941, when he became venereal disease consultant for the U. S. Public Health Service in a ten state area. Dr. Heering graduated at the University of Michigan Medical School, Ann Arbor, in 1933 and received a degree in public health from Johns Hopkins University in 1939. He was commissioned an assistant surgeon in the U. S. Public Health Service in 1934, being promoted in 1943 to surgeon.

SOUTH CAROLINA

State Society Approves Proposed Expansion of Medical School.—At a special meeting of the council of the South Carolina Medical Association recently approval was given to the proposed expansion program for the Medical College of the State of South Carolina, Charleston. The council went on record in offering its full support to the board of trustees of the college to attain this objective. The state institution proposes, among other things, to extend its clinical teaching facilities and to establish a clinical center for reference of problem cases from physicians throughout the state. A hospital included in the general setup would be not just a general hospital, it is pointed out, but would be a teaching, diagnostic and research clinic. The service would be on a statewide basis and not competitive with private practitioners or other hospitals. The patients would be referred by private physicians but would remain private patients of the doctors who sent them.

TENNESSEE

State Meeting Canceled.—The Tennessee State Medical Association announces the cancellation of its regular meeting, which was scheduled to be held April 10-12 in Nashville.

Personal.—A dinner was held at the Belle Meade Country Club, December 15, in honor of Dr. Barney Brooks, professor of surgery, Vanderbilt University School of Medicine, Nashville, who was celebrating his sixtieth birthday.—Dr. Francis H. Cole, director of the tuberculosis control division of the Memphis and Shelby County Health Department, has been given a two year leave of absence. He will go to New York City for a postgraduate training course in thoracic surgery at Bellevue Hospital.

Consolidated Medical Assembly of West Tennessee.—A new medical society has been set up in the state to be known as the Consolidated Medical Assembly of West Tennessee. The idea to form the new unit stemmed from a suggestion of Dr. Stanford M. Herron, Jackson, secretary of the Madison County Medical Society, and on Dec. 5, 1944 a number of physicians met at Jackson from the counties of Madison, Chester, Henderson, McNairy, Fayette, Carroll, Hardeman, Crockett, Benton, Decatur, Haywood and Gibson to discuss the proposed new organization. Officers of the new group, which will have a membership of about 106, include Drs. Ernest M. Smith, Selmer, president; John W. Morris, Somerville, Cornelia J. Huntsman, Lexington, and Roy M. Lanier, Brownsville, vice presidents, and Dr. Herron, secretary and treasurer.

TEXAS

Clinical Conference Canceled.—The Dallas Southern Clinical Society has voluntarily canceled its spring clinical conference scheduled for Dallas, March 19-22.

Memorial to Physician.—A lounge in the Truett Memorial Building of Baylor University Hospital, Dallas (*THE JOURNAL*, Dec. 16, 1944, p. 1041), will be furnished as a memorial to Dr. Benjamin H. Freeman, Garland, as the result of a gift by Mrs. Freeman, Garland, and her daughter, Mrs. Charles Dent, Dallas.

Grants for Research.—Eli Lilly and Company recently made a grant of \$2,500 to Dr. Donald Slaughter, dean of students, Southwestern Medical College of the Southwestern Medical Foundation, Dallas, for the study of aspergillus acid and other antibiotics in the department of pharmacology by Andres Goth, assistant professor of pharmacology. The Rose Lampert Graff Foundation, Los Angeles, recently made a grant of \$500 to Simon Edward Sulkin, Ph.D., associate professor of bacteriology and immunology at the school for studies on neutrotropic viruses.

GENERAL

Alcohol Hygiene Bulletin.—*Alcohol Hygiene* is the publication of the recently created National Committee on Alcohol Hygiene. It will be published bimonthly for the committee by Alcoholism Publications, 2030 Park Avenue, Baltimore 17.

Film on Rheumatic Fever.—"Jimmy Beats Rheumatic Fever," a fifteen minute sound film strip, has just been released by the Metropolitan Life Insurance Company. It was made under the supervision of Dr. George M. Wheatley, New York, assistant medical director of the company, and the script was reviewed by Dr. T. Duckett Jones, Boston. Requests for the use of the film should be addressed to the welfare division, Metropolitan Life Insurance Company, 1 Madison Avenue, New York 10.

Meetings Canceled.—The council of the American Association of Pathologists and Bacteriologists voted unanimously to cancel scientific meetings for the year 1945. Proposals for membership will be voted on by the council at a meeting to

be held in the late spring. They should be in the hands of the secretary, Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland, not later than April 1. Members may notify the secretary of any other business which they wish to present to the council.—The American Urological Association, which was to hold its annual meeting at the Claridge Hotel, Atlantic City, N. J., June 11-14, has canceled its session.—The annual meeting of the American Society for Research in Psychosomatic Problems, which was to be held June 15-16 in New York, was canceled.

Efforts to Combat Rheumatic Fever.—Dr. Betty Huse, assistant director of the crippled children's program of the U. S. Children's Bureau, recently stated that efforts of nineteen states to combat rheumatic fever are "barely a drop in the bucket" but have given enough experience to serve as a basis for a future national program. School surveys indicate that a half million children have rheumatic fever, it is reported. According to Dr. Huse in the *New York Times*, among children from 5 to 14 years of age in 1942, the last analyzed year, 1,610 deaths were caused by rheumatic fever, as against 1,441 by pneumonia and 1,112 by tuberculosis, the two next highest causes of death. In the 15 to 19 age group 1,374 deaths were caused by rheumatic fever; more deaths, 2,967, were caused by tuberculosis; fewer, 917, by pneumonia. At the present time, it was stated, only 240 of the 3,082 counties in the United States and its possessions have some services available for children with rheumatic fever. Eight states, however, considered the work so important that a program was launched in wartime. The states were Missouri, Montana, Minnesota, Nebraska, South Carolina, Wisconsin, Michigan and Idaho. New York started the program and later discontinued it because of difficulties in getting personnel, it was stated.

The Pediatric Foundation.—The *Bulletin of the Pediatric Foundation* made its appearance with the December issue and discusses the organization of the foundation, chartered March 31, 1944 as a nonprofit membership corporation to encourage greater use of established work for mental and physical health in early childhood. The bulletin states that the foundation will devote its initial effort to two major objectives:

To aid in the provision of additional facilities, such as clinics, schools and camps, for the care, treatment and education of child victims of cerebral palsy, an affliction second only to infantile paralysis as a cause of crippling conditions among children.

To aid in the provision of additional centers and other facilities for the care, treatment and special education of child victims of rheumatic fever and to maintain a demonstration center for the convalescent care of such child sufferers, which has been in operation for the last four summers at East Hampton, Long Island, N. Y.

The new organization is said to be concerned exclusively with fields of service in which needed facilities have not yet been adequately provided, but at present its major concern is to stimulate the provision of such facilities for the care, treatment and education of child victims of cerebral palsy and rheumatic fever. The foundation plans to launch certain original projects but will be equally interested in encouraging greater use by physicians and parents of existing facilities of proved worth, not duplicating or competing with agencies or institutions already established but rather influencing the expansion of such services. The foundation, which will maintain offices at 12 East 41st Street, New York 17, will be managed by a board of directors consisting of ten members and an advisory committee of ten members. Mr. Arthur Dunn is counsel of the organization, Mary E. Collins assistant secretary, assistant treasurer and Mr. Bart Andress the executive vice president.

Edward Stitt Awarded Medal in Tropical Medicine.—A gold medal and an honorarium of \$500 for outstanding service in the field of tropical medicine were presented February 5 by the American Foundation for Tropical Medicine to Rear Admiral Edward R. Stitt (MC), retired, formerly Surgeon General of the U. S. Navy. The presentation was made on behalf of the foundation by Col. Richard Pearson Strong, M. C., director of tropical medicine at the Army Medical School, Washington, D. C., last year's recipient of the award and the person for whom the medal was named. The medal and honorarium were established in 1944 by the Winthrop Chemical Company (*THE JOURNAL*, March 4, 1944, p. 660). Known as the Richard Pearson Strong Medal and bearing a profile of Colonel Strong on its face, it is to be awarded annually for distinguished service in tropical medicine. In conferring the award Colonel Strong declared that "Admiral Stitt is an exponent of scientific truth in his medical publications and reviews. His leadership, inspiring example and devotion to work in the field of tropical medicine through many years have justly won for him the epithet of 'Father of Tropical Medicine in the United States.'" Admiral Stitt

graduated at the University of Pennsylvania Department of Medicine, Philadelphia, in 1889. In 1913 he wrote the first American textbook of tropical medicine. Among other positions held by Admiral Stitt are those of Surgeon General of the U. S. Navy from 1920 to 1928 and professorships in the schools of tropical medicine at Georgetown University, George Washington University and the University of the Philippines. The principal speaker at the presentation meeting at the University Club, New York, was Major Gen. George C. Dunham, M. C., of the Office of the Coordinator of Inter-American Affairs, who spoke on "Tropical Medicine and International Relations."

Educational Campaign on Epilepsy.—The recent distribution of a pamphlet on "Epilepsy—The Ghost is Out of the Closet" is one of the first ventures in an educational campaign to disseminate knowledge in this field. The Association to Control Epilepsy, 22 East 67th Street, New York 21, and the American Epilepsy League, 50 State Street, Boston, are jointly sponsoring the campaign. The former group was chartered under the University of the State of New York, Education Department, by the board of regents, April 21, 1944, and officers include Mr. David G. Baird, president, Dr. Tracy J. Putnam, vice president, Mr. Spencer B. Witty, treasurer, and Mrs. Henry H. Denning, executive secretary. The pamphlet is being distributed to teachers and school administrators, doctors, nurses, social workers, rehabilitation workers, civic educational and religious groups and employers of organized labor, and to individuals on request to the Public Affairs Committee, Inc., 30 Rockefeller Center, New York 20. The Association to Control Epilepsy is also sponsoring the Baird Foundation Clinic of Beth David Hospital, New York, which was established Aug. 1, 1944 primarily for the study, treatment and guidance of children with epilepsy and is said to be the only clinic which combines medical, psychologic and social treatment of persons with epilepsy. Another activity of the Association to Control Epilepsy is an attempt to reach industry through a general educational campaign and direct contact with the employer. A brochure is now being prepared clarifying the laws which concern the epileptic with regard to employment. In addition, the group's program includes a summer camp for epileptic and nonepileptic children, and plans are now under way to send 75 children to a camp in the Adirondacks from July 2 to August 27. The association also sponsors a private school where a child may be placed to aid in his permanent adjustment, and a directory of physicians, clinics and schools throughout the United States interested in the problem is now being compiled. The American Epilepsy League was founded in 1939.

Teaching Program for Leprologists.—For the last two years the Leonard Wood Memorial has cooperated with the Office of the Coordinator of Inter-American Affairs in providing a year's teaching program to leprologists from South America and Mexico. The first group included Drs. Alberto Caballero V., Colombia; Eduardo Alberto Carboni, Argentina; Rafael Cepeda R., Colombia; Artur Porto Marques, Brazil; Augusto Rodolfo Mercu, Argentina; Roberto Numez Andrade, Mexico; Luis Rendon Ch., Ecuador, and Glyme Leite Rocha, Brazil. The second group is composed of Drs. Rubem David Azulay, Brazil; Luiz Marino Bechelli, Brazil; Jose de Jesus Castaneda, Mexico; Jacinto Convit, Venezuela; Wallace Crawford, Canada and China; R. Ben Gullison, Canada and India; Antonio Jasbon-Mantilla, Colombia, and Jorge Suarez, Bolivia.

Each group had a three months course at the Medical School and Hospital, Columbia University, New York, in dermatology and are now at Western Reserve University School of Medicine, Cleveland, for a three months course in epidemiology and pathology. Completing their work at Western Reserve, they will go to the U. S. Marine Hospital (National Leprosarium) at Carville, La., where they will finish their training with two months of work in the clinics. The Office of the Coordinator is responsible for the expenses of these men, and the Leonard Wood Memorial was responsible for their selection and training. The selection was made as a result of a visit to South American countries by Malcolm H. Soule, Sc.D., of the University of Michigan, Ann Arbor, present chairman of the medical advisory board of the Leonard Wood Memorial, who recommended candidates to the medical board. This group made the final selection. According to Perry Burgess, I.L.D., New York, president of the Leonard Wood Memorial, the results of the program have been most satisfactory. The memorial, which presents the students with a certificate of their studies on their completion, restricted the candidates to graduate physicians engaged in antileprosy work.

Foreign Letters

LONDON

(From Our Regular Correspondent) Jan. 27, 1945.

Reform of Psychiatric Services

Speaking at the centenary luncheon of the Royal Medico-Psychological Association, the minister of health, Mr. Willink, predicted important reforms in psychiatric services. Among these was unified control of all mental health services under a single set of authorities. In every area there should be a single body to deal with all aspects of mental health, the minister stated, so that they could survey the field as a whole, instead of a variety of authorities or combination of authorities, each concentrating on a limited section of the entire field. Unified control was held essential to the proper development of a comprehensive outpatient service, the first great step toward application of the principles of preventive medicine to mental health. There must be a parallel development of the ancillary services, Mr. Willink added, for it is uneconomical to leave a highly trained psychiatrist to work as best he can without the knowledge of the patient's home and occupational background which a trained social worker can give him. It is even more wasteful to leave a psychiatrist in charge of an outpatient center without adequate clerical assistance, he said.

Psychiatry is still a young specialty and has suffered from the relative isolation of many mental hospitals and the difficulty which the medical staffs have keeping in touch with general medicine, the speaker declared. He was anxious to secure a closer relation between mental and general hospitals, he said, not only by interchange of staffs but by establishing psychiatric units in all the hospitals. The report of the Royal College of Physicians on medical education suggested that every teaching hospital should have a psychiatric department which should form a link with a mental hospital, he pointed out.

Another important task would be the development of a more scientific system of training psychiatrists, it was held. The time has gone by when young medical officers should be left to train themselves, the minister believes. Psychiatry has suffered from being split into too many sections; in the postgraduate training of the future a broader view should be taken and mental deficiency and child psychiatry should be included, he stated. All mental hospitals should take part in a well planned scheme of research, he said in conclusion.

The Friends' Ambulance Unit

The principles of the Society of Friends prevent members from fighting in war, but they have distinguished themselves by their ambulance work and relief measures. The December *Bulletin of the Friends' Ambulance Unit* says seven teams are now working in the Netherlands under the direction of the civil affairs branch of the army. They receive and register refugees, help with medical examination and treatment, provide bedding and sleeping rooms, organize catering arrangements and volunteers among the refugees and attend to their personal problems. They established a communal kitchen to supply meals on an emergency basis and converted a large concentration camp into a transit center for refugees. They also helped to organize survey parties to investigate conditions in Normandy. These surveys revealed widespread dysentery, scabies and impetigo. Inmates of the former hospice at Falaise were living in byres, as no beds were available. Patients with tuberculosis were lying on straw, and the only persons caring for them were a priest and three or four sisters, it was found.

Mobile surgical teams maintained on the Yunnan front in China have contributed to raising standards of medical service, which are now regarded as the best since the war began.

Tenching is the largest city retaken by the Chinese. The arrival of the Japanese drove out 75 per cent of the population. Its recovery, against which the Japanese fought to the last man, reduced it to complete ruin. Corpses of men and horses lay in shallow graves and produced a horrible stench. Vultures circling over the city were gorged. Now the surgical teams of Friends in cooperation with the Chinese Red Cross maintain a hospital and a clinic and do public health work which is regarded as a model for the future.

PUERTO RICO

(From a Special Correspondent) Jan. 31, 1945.

Research on Filariasis

Two scientists from the research staff of Columbia University, New York, have been working in San Juan since January 5 in connection with a major experiment on the strange tropical disease filariasis in which more than 25 island patients, including children, have been undergoing special treatment since early last summer. These investigators, James T. Culbertson and Harry Rose, decline to comment on what success has been obtained with their experiment, which is believed to be one of the largest of its kind undertaken during the war, but some light was shed on their work by a Universal Trade Press Syndicate correspondent.

Drug refinements over established technics were placed in use early last summer after the two men had come to San Juan to supervise the selection of patients and the beginnings of treatment. The two scientists then returned to New York and a steady stream of blood samples were sent to them for study during the months preceding their return to San Juan. After approximately six months of analysis they returned to San Juan on January 5. Part of the experimental treatment was said to consist of administration of comparatively new derivatives of antimony. At about the same time other New York scientists were studying what was reported to be encouraging results obtained in the treatment of filariasis with another antimony derivative, anthiomaline. Research had been done with this drug at St. Croix, Virgin Islands, and it was described by doctors here as a big stride toward a cure of the disease. Probably the most spectacular of all tropical diseases, filariasis, which in the advanced stage results in elephantiasis, has rarely been cured heretofore. The return of some war veterans from tropical battle areas with the disease accentuated the almost insignificant medical problem that the disease formerly created in the United States. In Puerto Rico the affliction, while not a major medical problem, is described by health officials as fairly prevalent.

Pan American Public Health Meeting in Puerto Rico

All Latin American nations have been invited to attend a conference of the Puerto Rico Public Health Association to be held at the School of Tropical Medicine in San Juan, February 14-17, according to Dr. Guillermo Arbona, secretary of the organization. Sessions at the school, which are to be held primarily on the subject of public health and sanitation, will be bilingual. Papers read in Spanish will be summarized in English, and vice versa. The British government may be represented. Sir Rupert Biercliff of the British West Indies Office of Development and Welfare has been invited and has said he may come. At least one woman scientist is also expected to be present. Dr. Dorothy B. Nyswander, consultant on health education of the Office of Inter-American Affairs, has announced her intention to attend. In addition to the representatives of other American nations, delegates of the sanitary bureau of the Pan American Union and representatives of the Coordinator of Inter-American Affairs and the United States Public Health Service are expected to attend.

BRAZIL

(From Our Regular Correspondent)

Dec. 30, 1944.

Study of Coronary Sclerosis

Dr. Reinaldo Chiaverini and Dr. Paulo Rebocho of the Department of Medicine of the University of São Paulo have just published the results of a clinical and pathologic study of coronary sclerosis. For this study they used records of 1,083 necropsies performed during the year 1942 in the department of pathology of the university. Of this total, made up of persons of both sexes from 1 year of age up to 90 years, they found 292 (24.2 per cent) typical cases of coronary sclerosis as shown by macroscopic examination alone. There were no cases in the group 0-19 years, 6 cases (3.5 per cent of the total number in this age group) in the group 20-29 years, 17 cases (10.4 per cent) in the group 30-39 years, 54 cases (33.9 per cent) in the group 40-49 years, 62 cases (48.0 per cent) in the group 50-59 years, 53 cases (63.1 per cent) in the group 60-69 years and 70 cases (83.3 per cent) in the group 70 years and over. The mean age at death for the whole group of 262 cases was 59.5 years. Coronary sclerosis was present in 26.4 per cent of the males and 19.8 per cent of the females. The mean age of the men was 61.5 years and that of the women was 58.8. The condition was found in 27.4 per cent of white people and 18.9 of the colored. Coronary sclerosis was more frequent in foreigners (52.0 per cent) than in native Brazilians (35.5 per cent), taking into consideration only those more than 30 years of age. Brazilians are shown to fall victims to coronary sclerosis at an earlier age than are foreigners, as the mean age at death was 53.4 years for the former and 62.1 for the latter. Coronary sclerosis evolved into cardiac insufficiency in 49.6 per cent of the cases studied; it ended in myocardial infarction in 8.4 per cent of the cases; in 25.6 per cent of the cases there was hypertrophy of the left ventricle (probably through chronic arterial hypertension). In a total of 80.9 per cent of the cases there was coexistent aortic arteriosclerosis. Coronary sclerosis remained absolutely asymptomatic during the whole life of the patient (latent coronary arteriosclerosis) in some cases. In other instances it gave rise to one or more clinical manifestations, such as congestive cardiac insufficiency, angina pectoris, electrocardiographic changes or infarct of the myocardium.

In each of the 88 patients on whom electrocardiographic examination was performed the electric curve revealed some change. The electric axis was displaced to the left in 60 cases, to the right in 5 and was not displaced in 23. Sinus rhythm was present in 73, auricular fibrillation in 15 and ventricular extrasystole in 19, partial auriculoventricular block in 1, branch block in 13 and lesser QRS changes in 61 cases. In the majority of cases there were T or ST segment changes. In 10 cases there was a P change. The Wassermann reaction was positive in 25 out of 78 patients on whom the test was made. Hypertension of the peripheral circulation was coexistent in 62 cases, in 10 there was cardiovascular syphilis, in 2 cardioarticular rheumatism, in 6 chronic pulmonary cardiopathy and in 1 chronic myocarditis from Chagas disease.

Purification of Vaccine Pulp by Mixture of Glycerin and Penicillin

Dr. Cassio Miranda of the Oswaldo Cruz Institute has published a preliminary note to report the good results of his experiments to improve the purification of cowpox vaccine pulp through the addition of penicillin to the glycerin routinely used for exterminating pathogenic bacteria. This new technic may contribute toward solving a problem of first importance, as the complete purification of the immunizing material commonly used to vaccinate against smallpox is yet somewhat incomplete and defective. It is well known that glycerin is the universal purifying material because of its differential germi-

cide properties, which may be employed almost without harmful effect on the immunizing virus. But, as glycerin has a lesser bactericidal action on cocci than, on the other hand, are particularly sensitive to penicillin, Dr. Miranda thought it would be a good idea to associate this drug with glycerin in order to improve the purification. He used a solution of penicillin prepared at the Oswaldo Cruz Institute and containing 25 Oxford units per cubic centimeter. He mixed and finely ground the cowpox pulp taken from 5 different calves and put 5 cc. of such ground pulp in three glass tubes, each containing a distinct purifying material: in the first tube 5 cc. of ground pulp plus 5 cc. of sterilized glycerin, in the second tube 5 cc. of pulp plus 5 cc. of penicillin solution and in the third tube 5 cc. of pulp plus 5 cc. of a mixture of 50 per cent penicillin solution and 50 per cent sterilized glycerin. After having been well shaken, the three tubes remained twenty-four hours at room temperature and then were kept in the refrigerator at 6-8 C. After four days each mixture was plated on plain agar (0.1 cc. of material in each plate) and incubated at 37 C. for forty-eight hours. The plates with pulp plus glycerin showed many large colonies, white and yellow, of *Staphylococcus albus* and *aureus*; the plates with pulp plus penicillin showed many small, transparent colonies; the plates with pulp plus the mixture of penicillin and glycerin showed many colonies of both the transparent and the colored types. The plating of material kept for two, six, eight or more days in the refrigerator showed a progressive reduction in the number of colonies. After thirty days in the refrigerator the material was tested on rabbits for its immunizing capacity, giving the same results with the three kinds of mixture. A second series of mixtures—pulp plus glycerin and pulp plus penicillin—kept for thirty days in the refrigerator showed complete absence of bacillary forms and the presence of 6,080 colonies of *Staphylococcus albus* and *aureus* in the former mixture, while the latter presented only a thin, transparent film of a pure cultured, gram negative bacillus, probably *Escherichia coli*.

Dr. Miranda is still experimenting with many more details of the technic, the results of which will be reported later but from the present beneficial effects he believes that the mixture of glycerin and penicillin may be of real value in improving the preparation of smallpox vaccine.

Marriages

NEWTON WEBSTER ALLEBACH, Charleston, W. Va., to Miss Rosemary Jamison of Gloucestershire, England, in New York, December 23.

ROBERT HILTON STEPHENSON, Brantley, Ala., to Miss Emily Thornton Clark at Long Beach, Calif., November 3.

HENRY BOWLING TURNER, Memphis, Tenn., to Miss Anne Rodgers Doughten in Philadelphia, January 16.

CYRIL JOHNSTONE JONES, New York, to Miss Rose Victoria Randolph at Dorchester, Mass., September 25.

JOHN McLEAN WILSON, Darlington, S. C., to Miss Amelia Talbert of Greenwood in Greenville recently.

JOHN L. JACKSON III, Wichita Falls, Texas, to Miss Frances Harris Lockhart of Galveston, November 29.

WILLIAM ROBERT KUEFFNER JR., St. Paul, to Miss Elizabeth Hunter Berg of New York, January 22.

BRYAN VICTOR WILLIAMS, Pittsburgh, to Miss Jean Louise Davis in Oceanside, Calif., December 2.

JOHN M. DODD JR. to Miss Gladys Crawford, both of Ashland, Wis., at Seattle, January 20.

WILLIAM C. OWENS, Baltimore, to DR. ELLA M. UHLEF of Allentown, Pa., December 27.

PHILIP R. ROEN, New York, to Miss Florence S. Glickstein of Brooklyn, December 23.

PHILIP F. NEWMAN to Mrs. Rebecca Snyder, both of Allentown, Pa., December 31.

Deaths

Fred Houdlett Albee © noted orthopedic surgeon, died in New York February 15, aged 68.

Dr. Albee was born in Alna, Maine, April 13, 1876. He studied at the Lincoln Academy, receiving his A.B. degree at Bowdoin College in 1899 and his M.D. at Harvard Medical School in 1903. He studied extensively throughout Europe and during his career received numerous honorary degrees and citations in recognition of his contributions to the field of orthopedic surgery, in which he was a pioneer and in which he had devised new technics. He had served as professor and director of the department of orthopedic surgery at the New York Post-Graduate Medical School, Columbia University, and as professor at the University of Vermont College of Medicine, holding honorary professorships at the University of San Marcos, Lima, Peru, and the College of Physicians and Surgeons, Atlanta, Ga. He had been consulting surgeon to various hospitals, to the Pennsylvania Railroad System and Seaboard Air Line, consultant in orthopedics to the Byrd Antarctic Expedition and member of the advisory orthopedic council to the Surgeon General of the U. S. Army.

Dr. Albee was a member of scientific groups in both the United States and countries throughout the world. He was a life member of the American College of Surgeons, once serving as a member of its board of governors, founder of the International Society of Orthopedic Surgeons and formerly president of the Association of Surgeons of the Pennsylvania Railroad, American Orthopaedic Association, American Academy of Orthopaedic Surgeons, Pan American Medical Association and the International College of Surgeons, and he had been certified by the American Board of Orthopaedic Surgery. He had been a member of President Hoover's Conference in Child Health and Protection.

During World War I he held the rank of colonel in the Medical Reserve Corps, serving as chief of staff of General Hospital number 3 at Colonia, N. J., a unit which he helped establish and which, as the result of the work done there, became the first rehabilitation center, later evolving into the various facilities of the New Jersey Rehabilitation Commission. In 1940, for his twenty years' service as chairman of this commission, he was honored with a testimonial dinner sponsored by the state department of labor and rehabilitation. He had demonstrated original surgical methods of bone grafting in Germany, England and France in 1914 and in the military hospitals of France in 1916. He was the official representative of the Medical Corps of the U. S. Army to the Inter-Allied Congress in Rome, Paris and Bologna in 1919 and of the U. S. Army at the Netherland Orthopedic Congress in Amsterdam in 1923. He was the honorary American president of the International Congress for Industrial Accidents and Diseases in Amsterdam in 1925 and in Budapest in 1927 and, in 1933, founder of the Florida Medical Center, Venice.

Among Dr. Albee's prolific contributions to the literature are Bone Graft Surgery, 1915, Orthopedic and Reconstructional Surgery, 1919, Injuries and Diseases of the Hip, 1927, Bone Graft Surgery in Disease, Injury and Deformity, 1940, and a Surgeon's Fight to Rebuild Men, 1943.

Robert Tuttle Morris © prominent for his contributions to the specialties of gynecology and surgery, died at the Stamford Hospital, Stamford, Conn., January 9, aged 87, of cerebral thrombosis and generalized arteriosclerosis.

Dr. Morris was born in Seymour, Conn., May 14, 1857. He studied at Cornell University from 1876 to 1879, taking his M.D. degree at the Columbia University College of Physicians and Surgeons in 1882. In 1891 he was given an honorary A.M. by Centre College in Kentucky. Dr. Morris evinced an early interest in surgery, going to London to observe Lister's technic. From 1899 to 1917, when he became emeritus, Dr. Morris was professor of surgery at the New York Post-Graduate Medical School, where he had earlier served as adjunct professor of surgery and instructor in clinical surgery. He devised many new surgical technics, creating one in operations for appendicitis which now bears his name. Garrison's History of Medicine credits Dr. Morris with many technical improvements and original ideas.

Dr. Morris held membership in a number of scientific societies, serving as president in 1907 of the American Association of Obstetricians and Gynecologists and in 1916 of the American Therapeutic Association, and for many years of the Physicians Home, Inc. He was a fellow of the American College of Surgeons.

Dr. Morris had written extensively, including, "How We Treat Wounds Today," "Lectures on Appendicitis," "Hopkins's

Pond," "Dawn of the Fourth Era in Surgery," "Tomorrow's Topics Series," "Microbes and Men," "A Surgeon's Philosophy," "Doctors versus Folks," "The Way Out of War," "Nut Growing" and "Editorial Silence." His monographs and volumes dealt with practically all subjects, from early geological formations to the United States Senate.

After his retirement from active practice in 1917 Dr. Morris devoted most of his time to the philosophy of the naturalist, growing nut trees, planting twenty-six varieties of chestnuts, and observing birds and animals.

William Newbold Bispham © Colonel, U. S. Army, retired, Baltimore; University of Maryland School of Medicine, Baltimore, 1897; lecturer in medicine at his alma mater; associate member of the Medical and Chirurgical Faculty of Medicine; veteran of the Spanish-American War and World War I; entered the medical corps of the U. S. Army as an assistant surgeon in 1900; became a captain in 1905, major in 1909, lieutenant colonel in 1917 and colonel in 1926; had been with the Militia Bureau from 1928 to 1932; assigned to the headquarters of the American Medical Association as liaison officer, Surgeon General's Office, U. S. Army, during World War I; fellow and for many years a member of the board of governors of the American College of Surgeons; member of the American Association of Tropical Medicine, the National Malaria Committee and the Baltimore City Medical Society; author of the recently published book, "Malaria"; wrote the Training Volume of the history of the Medical Department of the United States Army in the World War; died in the University Hospital January 1, aged 69, of cardiac decompensation, diverticulitis and renal failure.

John Quincy Myers © Charlotte, N. C.; North Carolina Medical College, Davidson, 1904; member of the House of Delegates of the American Medical Association in 1920 and 1921, 1937, 1938 and 1939; past president of the Medical Society of the State of North Carolina and the Mecklenburg County Medical Society; formerly member of the state board of medical examiners; served as president of the North Carolina Board of U. S. Pension Examiners; organizer and first secretary-treasurer of the North Carolina Hospital Association; member of the draft board of Charlotte during World War I; founder and at one time owner of the Tranquil Park Sanitarium; medical referee of the Life Extension Institute, Metropolitan Life Insurance Company and the North Western Life Insurance Company; chairman of the Charlotte Medical Committee, Procurement and Assignment Service and the U. S. Manpower Commission since 1942; died December 3, aged 67, of coronary thrombosis.

John William Flinn © Prescott, Ariz.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1895; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; member of the House of Delegates of the American Medical Association from 1920 to 1922; past president of the Arizona State Medical Association; member of the National Tuberculosis Association; member of the school board, and president of the board of directors of the Hassayampa Hotel; president of the chamber of commerce, 1912-1913; at one time member of the board of regents of the University of Arizona; medical director and owner of the Pamsetgaaf Sanatorium; president of the Prescott Community Hospital staff; received an honorary M.A. degree from the University of Arizona in 1921; died November 21, aged 74, of carcinoma of the rectum.

Aaron Brown © New York; Cornell University Medical College, New York, 1906; assistant clinical professor of medicine at the New York University College of Medicine; specialist certified by the American Board of Internal Medicine; member of the American Association for the Study of Allergy and the Society for the Study of Asthma and Allied Conditions; founder and once president of the Phi Delta Epsilon Fraternity; served as medical inspector for the city board of health; assistant visiting physician, Bellevue Hospital; attending immunologist, Midtown Hospital, and consulting physician to the Bronx Hospital; died January 24, aged 60, of coronary thrombosis.

Walter E. Bartlett, Elkton, Ky.; University of Nashville (Tenn.) Medical Department, 1896; member of the American Medical Association; died in Clarksville, Texas, November 11, aged 82.

Julia Mary Lewandowski Bauman © Holyoke, Mass.; Woman's Medical College of Pennsylvania, Philadelphia, 1911; died November 17, aged 62.

Edwin Hamilton Bidwell, Niles, Mich.; Dartmouth Medical School, Hanover, N. H., 1884; on the staff of the Pawating Hospital; died November 13, aged 84.

Charles Robert Blake * Richmond, Calif.; Medical Department of the University of California, San Francisco, 1891; for thirty-four years health officer of Richmond; member of the honorary staff of the Richmond Hospital, where he died December 27, aged 76, of chronic nephritis and uremia.

B. Ray Browning, Littleton, N. C.; University of Maryland School of Medicine, Baltimore, 1891; local surgeon for the Seaboard Airline Railway; died November 26, aged 77, of cardiorenal vascular disease.

William Earl Bryan * Chattanooga, Tenn.; University of Tennessee College of Medicine, Memphis, 1917; served during World War I; past president of the Chattanooga and Hamilton County Medical Society; on the staff of the Erlanger Hospital; died December 29, aged 58.

John A. Cameron, Pickford, Mich.; Detroit College of Medicine, 1896; also a pharmacist; died in Miami Beach, Fla., December 17, aged 78, of cerebral hemorrhage.

Victor Alvin Carriere, St. Louis; Homeopathic Medical College of Missouri, St. Louis, 1896; died in Clayton December 18, aged 71, of coronary occlusion.

William Wright Christian, St. Paul; New York Homeopathic Medical College and Hospital, New York, 1895; died in the Ancker Hospital November 4, aged 75, of hypertensive heart disease and myocardial infarction.

Christopher Columbus Cooke, Richmond, Va.; Howard University College of Medicine, Washington, D. C., 1921; served an internship at City Hospital number 2, in St. Louis; on the staff of the Richmond Community Hospital; died December 1, aged 60, of hypertensive heart disease.

Edward Moses Corbin, Sullivan, Ind.; Marion-Sims College of Medicine, St. Louis, 1899; member of the American Medical Association; honorary member of the Indiana State Medical Association; died December 12, aged 76, of coronary occlusion.

Allen Corson * Ocean City, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1907; past president of the Medical Society of Cape May County; in 1935 president of the New Jersey State Homeopathic Medical Society; on the staff of the Shore Memorial Hospital, Somers Point; died in Princeton December 25, aged 63, of cerebral hemorrhage.

Claud Burton Crawford, Blue Ridge, Ga.; Medical College of Alabama, Mobile, 1905; member of the American Medical Association; secretary of the Blue Ridge Medical Society; city physician; died November 7, aged 71, of uremia.

J. Seely Cummins, Warwick, N. Y.; the Hahnemann Medical College and Hospital, Chicago, 1891; for many years health officer of the village and town of Warwick; health officer of Greenwood Lake village; for fifteen years physician to the Orange County Farm; died December 10, aged 87, of arteriosclerosis.

Charles Tinsley Davis, Memphis, Tenn.; Vanderbilt University School of Medicine, Nashville, 1881; died November 27, aged 85, of chronic nephritis and uremia.

Isaac Alexander Dunlap, Sutherlin, Ore.; American Medical Missionary College, Battle Creek, Mich., and Chicago, 1899; at one time physician in charge of the Walla Walla Sanitarium, College Place, Wash.; died in the Portland Sanitarium, Portland, in November, aged 85, of coronary disease.

Robert George Feek, Au Sable Forks, N. Y.; Trinity Medical College, Toronto, Ont., Canada, 1891; for many years health officer of the town of Moira; died December 17, aged 88, of pernicious anemia.

James William Fleming, Utica, N. Y.; Albany Medical College, Albany, N. Y., 1908; member of the American Medical Association; school physician; on the staff of the Faxon Hospital; died January 21, aged 63, of heart disease.

Edgar Newton Fought, Philadelphia; Jefferson Medical College of Philadelphia, 1905; died in the Philadelphia General Hospital December 25, aged 67, of cardiovascular disease.

William F. Gardiner, San Diego, Calif.; Albany Medical College, 1883; died December 3, aged 87, of congestive heart disease.

Angelo David Garibotti, Santa Cruz, Calif.; Creighton University School of Medicine, Omaha, 1938; member of the American Medical Association; interned at the Creighton Memorial St. Joseph's Hospital in Omaha; on the staffs of the Santa Cruz Hospital, Santa Cruz County Hospital and Sisters Hospital, where he died December 14, aged 32, of mushroom poisoning.

Luiz Rodrigues Gaspar, Honolulu, Hawaii; Université Libre de Bruxelles Faculté de Médecine, Belgium, 1897; died in Oakland, Calif., November 24, aged 70, of chronic interstitial nephritis and arteriosclerosis.

Samuel Gellert * New York; Columbia University College of Physicians and Surgeons, New York, 1904; member of the National Gastroenterological Association; on the staff of the City Hospital, Welfare Island; died November 2, aged 63, of lymphoma.

John Weaver Gordon * Clearfield, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1903; served an internship at the Presbyterian Hospital, Philadelphia; medical examiner of the draft board during World War I; fellow of the American College of Surgeons; head of the Swoope Maternity Unit, chief gynecologist and obstetrician, and president of the staff, Clearfield Memorial Hospital, where he died December 19, aged 66, of an embolism.

Samuel A. Greenberg * Forest Hills, N. Y.; Université de Lausanne Faculté de Médecine, Switzerland, 1941; interned at the Queen's General Hospital in Jamaica; died in the Jewish Hospital, Brooklyn, November 4, aged 28, of subacute endocarditis.

Jason Grant Hanks, Everett, Pa.; Jefferson Medical College of Philadelphia, 1890; member of the American Medical Association; president of the First National Bank; died in the Memorial Hospital, Cumberland, Md., December 14, aged 79, of arteriosclerosis and hypertrophy of the prostate.

Nelson Lewis Hansen, Emerson, Neb.; Sioux City (Iowa) College of Medicine, 1903; physician and surgeon for the Chicago, St. Paul, Minneapolis and Omaha Railroad; died November 26, aged 68, of Parkinson's disease.

John Hamilton Hansford, Pratt, W. Va.; University of Louisville (Ky.) Medical Department, 1888; member of the American Medical Association; honorary life member of the West Virginia State Medical Association; formerly on the staff of the Sheltering Arms Hospital and Training School for Nurses, Hansford; served as surgeon for the Chesapeake and Ohio Railway Company; died December 26, aged 80, of coronary thrombosis.

Chester Ellis Harris * Basin, Wyo.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; fellow of the American College of Surgeons; interned at the Michael Reese Hospital in Chicago; served in France as a captain in the medical corps of the U. S. Army during World War I; died December 21, aged 63, of coronary occlusion.

Edward Everett Hawes, Hyannis, Mass.; University of Vermont College of Medicine, Burlington, 1886; member of the American Medical Association; member of the senior staff of the Cape Cod Hospital, where he died November 30, aged 82, of arteriosclerosis and pneumonia.

Alfred Irwin Hayes, Denver; Colorado School of Medicine, Boulder, 1896; member of the American Medical Association; associate and honorary member of the Colorado State Medical Society; at one time mayor of Goldfield, Colo.; on the staff of the Presbyterian Hospital; died in St. Luke's Hospital November 25, aged 75, of spontaneous pneumothorax and myocarditis.

James Olin Horne Jr., St. George, S. C.; Medical College of the State of South Carolina, Charleston, 1943, under the Army Specialized Training Program and was commissioned a first lieutenant in the medical corps, Army of the United States; went on inactive duty in order to complete an internship and junior residency at the Medical Center of Jersey City; died December 8, aged 27, of lobar pneumonia.

Harry Lee Howell * Bloomington, Ill.; Rush Medical College, Chicago, 1904; county coroner; served during World War I; on the staffs of the Brokaw Hospital, Normal, and Menomonee Hospital; died December 16, aged 66, of emphysema.

William Thomas Huddleston, Konawa, Okla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1895; member of the American Medical Association; died November 30, aged 77, of heart disease.

Solomon L. Hull, Central City, Neb.; Rush Medical College, Chicago, 1889; died in Omaha October 3, aged 91, of bronchopneumonia.

John Davies Jackson * Danville, Ky.; College of Physicians and Surgeons of San Francisco, 1902; fellow of the American College of Surgeons; for many years physician and surgeon for the Kentucky School for the Deaf; for twenty years a member of the city board of education; on the staff of the Ephraim McDowell Memorial Hospital; local surgeon for the Louisville and Nashville Railroad; died December 13, aged 68, of coronary thrombosis.

Albertus Jeffers, Smith Center, Kan.; Kentucky School of Medicine, Louisville, 1907; served as president of the Smith County Medical Society; died December 3, aged 62, of cerebral hemorrhage.

Henry Jelen, Boston (licensed in Massachusetts by years of practice); died in the Memorial Hospital, Chelsea, Mass., December 13, aged 78, of coronary thrombosis.

Curtis C. Johnson @ Buffalo; University of Buffalo School of Medicine, 1920; attending obstetrician on the staff of the Millard Fillmore and Deaconess hospitals; died in Minot, N. D., December 22, aged 50, of coronary thrombosis.

William Barner Karstetter, Indianapolis; University of the City of New York Medical Department, New York, 1884; died December 2, aged 84, of arteriosclerosis.

Thomas Francis Kelly, New York; New York University Medical College, New York, 1897; member of the American Medical Association; served on the staffs of the New York, St. Vincent's and Roosevelt hospitals and the Vanderbilt Clinic; died November 15, aged 72, of acute cardiac dilatation.

Edward Vincent Killelea, Fitchburg, Mass.; Baltimore Medical College, 1903; died October 28, aged 63, of pulmonary tuberculosis.

Harry Jennings Knapp @ Newport, R. I.; Long Island College Hospital, Brooklyn, 1892; on the consulting staff and for many years an active member of the regular staff, Newport Hospital; died in the Roosevelt Hospital, New York, December 17, aged 74, of chronic myocarditis.

Frank John Kuta, Cleveland; University of Wooster Medical Department, Cleveland, 1907; died December 14, aged 69, of pneumonia.

John E. Lee, Venice, Ill.; Keokuk (Ia.) Medical College, 1902; member of the American Medical Association; for many years mayor of Venice; president of the First National Bank of Madison; died December 8, aged 69, of cerebral hemorrhage.

William Harvey Leffler @ Chicago; Chicago College of Medicine and Surgery, 1908; on the staff of the Lutheran Deaconess Hospital, where he died December 16, aged 69, of coronary occlusion.

Wiley Ernest Lindsay, Winchester, Tenn.; University of Tennessee Medical Department, Nashville, 1905; died December 13, aged 61, of cerebral hemorrhage.

Malcolm Robert Markson, Milwaukee; Chicago College of Medicine and Surgery, 1916; served during World War I; on the staff of the Veterans Administration Facility; died January 19, aged 58, of pneumonia.

Wayne Hamilton May @ Minneapolis; University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, 1907; on the staff of St. Barnabas Hospital; died in a hospital at Hibbing, Minn., November 6, aged 67, of dissecting aneurysm.

Ralph Kleckner Mead, Chowchilla, Calif.; University of Pennsylvania Department of Medicine, Philadelphia, 1903; served as surgeon for the Buffalo and Susquehanna Railway Company; died in the Peralta Hospital, Oakland, October 12, aged 65.

Louis Wesley Meckstroth @ Chicago; University of Minnesota College of Medicine and Surgery, Minneapolis, 1893; died December 12, aged 75, of coronary thrombosis.

John Morton Meloy, Greenfield, Ind.; Kentucky School of Medicine, Louisville, 1890; formerly medical officer at the Indiana Reformatory, Pendleton; died December 2, aged 82, of coronary thrombosis.

Madeline Ann Muldoon Melson @ Little Rock, Ark.; University of California Medical School, San Francisco, 1924; member of the American Academy of Pediatrics; interned at the University of California Hospital; formerly fellow in pediatrics at Mayo Foundation, Rochester, Minn.; served as secretary of the Arkansas State Pediatric Association; member of the attending staff of St. Vincent's Infirmary; died January 12, aged 47, of heart disease.

William Lucius Meng, Fergus Falls, Minn.; the Hahnemann Medical College and Hospital, Chicago, 1910; served overseas during World War I; on the staff of the Fergus Falls State Hospital; formerly on the staffs of the Veterans Administration facilities in Marion, Ind., and Perry Point, Md.; died in St. Luke's Hospital January 9, aged 64, of carcinoma of the rectum and liver.

William Daniel Mueller @ Lieutenant Colonel, U. S. Army, retired, Traverse City, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899; member of the American Psychiatric Association; served during World War I; entered the medical corps of the U. S. Army as a captain in 1920; promoted to major in 1929 and lieutenant colonel in 1937; retired Aug. 31, 1939; died in the Letterman General Hospital, San Francisco, Aug. 28, 1944, aged 68, of carcinoma of the pancreas.

George Stephen Munson, Albany, N. Y.; Albany Medical College, 1880; member of the American Medical Association; eye surgeon for the New York Central Railroad for more than fifty years; consulting oculist, St. Peter's Hospital; died December 9, aged 88, of injuries received when struck by an automobile in New York.

John William Neal, Monroe, N. C.; University of the City of New York Medical Department, New York, 1884; member of the American Medical Association; died in a Charlotte hospital November 10, aged 85.

William Northrup, Grand Rapids, Mich.; Western University Faculty of Medicine, London, Ont., Canada, 1894; member of the American Medical Association; served during World War I; fellow of the American College of Physicians; past president of the Kent County Medical Society; superintendent of the Michigan State Reformatory, Ionia; on the consulting staff of the Butterworth Hospital, St. Mary's Hospital and the Blodgett Memorial Hospital, where he died December 9, aged 77, of gangrenous appendicitis.

John Hamilton Nye, Cromwell, Ind.; Medical College of Indiana, Indianapolis, 1892; member of the American Medical Association; died January 9, aged 75, of cerebral hemorrhage.

Peter M. Ostrander, York, N. Y.; Homeopathic Hospital College, Cleveland, 1883; formerly health officer in Nunda and a member of the Rotary Club; died November 26, aged 92, of cerebral arteriosclerosis.

Joseph Barnes Palmer, Thomasville, Ga.; University of Georgia Medical Department, Augusta, 1904; member of the American Medical Association; on the staff of the John D. Archbold Memorial Hospital; died November 3, aged 67, of coronary thrombosis.

John C. Parrish @ Vandalia, Mo.; American Medical College, St. Louis, 1877; Marion Sims College of Medicine, St. Louis, 1891; member of the board of public works; local surgeon for the Alton Railroad for many years; died December 4, aged 90.

Robert J. Payne, Stafford, Va.; University College of Medicine, Richmond, 1899; member of the American Medical Association; past president of the Fredericksburg Medical Society; formerly mayor, member of the city council and chamber of commerce of Fredericksburg; died December 9, aged 71.

Daniel Edgar Pugh, Utica, N. Y.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1911; member of the American Medical Association; served overseas during World War I; examiner for the Veterans Bureau; formerly deputy health officer of the city of Utica; past president and secretary of the Medical Society of the County of Oneida; on the staff of St. Luke's Hospital; died January 11, aged 57, of cerebral hemorrhage following an automobile accident.

Jesse Baldwin Rutherford, Washington, D. C.; National University Medical Department, Washington, 1889; died in St. Elizabeths Hospital December 27, aged 87, of hypostatic pneumonia and arteriosclerotic heart disease.

James Joseph Ryan @ New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1899; during World War I was chief medical officer of the Loyola Medical Unit at Camp Martin; from 1914 to 1924 professor of anatomy at Loyola University; on the staff of the New Orleans Eye, Ear, Nose and Throat Hospital from 1915 to 1917; senior surgeon on the staff of the Mercy Hospital and the Hotel Dieu, where he died November 24, aged 65, of hemiplegia and hypertension.

Guy W. L. Sandford, Madison Heights, Va.; University College of Medicine, Richmond, 1900; died November 6, aged 70, of angina pectoris.

Harry Louis Schultz @ Joliet, Ill.; Chicago College of Medicine and Surgery, 1917; since 1941 medical director of the Elwood Ordnance Plant; served during World War I; formerly on the staffs of Elmhurst Community Hospital, Elmhurst, Silver Cross Hospital, Joliet, and the Hospital of St. Anthony de Padua, Chicago; died December 17, aged 51, of coronary thrombosis.

Ford Wylis Sellars, East Milton, Mass.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1882; died January 3, aged 93, of pneumonia.

Howard Clay Sevier @ Tallulah, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1912; coroner of Madison Parish; died in the Mayo Clinic, Rochester, Minn., October 28, aged 55.

Arthur Louis Sherrill, Evanston, Ill.; New York University Medical College, New York, 1898; Cornell University Medical College, New York, 1899; assistant medical director

of the Equitable Life Assurance Company; died in St. Luke's Hospital, Chicago, December 2, aged 74, of generalized arteriosclerosis.

William K. Skilling, Baltimore; Johns Hopkins University School of Medicine, Baltimore, 1911; member of the American Medical Association; director, bureau of child hygiene, city health department; died in the Union Memorial Hospital November 20, aged 59, of cerebral hemorrhage.

James Will Smith, Aurora, Mo.; Physio-Medical College of Indiana, Indianapolis, 1901; member of the American Medical Association; died December 4, aged 66, of coronary thrombosis.

Ralph Merle Smith Ⓢ Glendale, Calif.; College of Medical Evangelists, Los Angeles, 1916; fellow of the American College of Surgeons; instructor in surgery at his alma mater; served during World War I; formerly on the staffs of the Riverside Community Hospital, Riverside, Loma Linda Sanitarium and Hospital, Loma Linda, and the Riverside County Hospital, Arlington; surgeon on the staff of the Glendale Sanitarium and Hospital; died November 28, aged 57.

Roscoe Likes Smith, Los Angeles; John A. Creighton Medical College, Omaha, 1908; specialist certified by the American Board of Radiology, Inc.; at one time in charge of the department of radiology at the Lincoln General Hospital, Lincoln, Neb.; died November 7, aged 60.

Frederick Gaither Thayer, Medford, Ore.; Northwestern University Medical School, Chicago, 1907; at various times city health officer, member of the water board and on the city planning commission; died November 14, aged 63.

Willis C. Trowbridge, Goldendale, Wash.; Union Medical College of Kansas City, Mo., 1900; died November aged 71.

Phoebe May Bogart Van Voast Ⓢ New York; Johns Hopkins University School of Medicine, Baltimore, 1906; consulting physician at the Morrisania Hospital; died January 1 aged 65, of coronary thrombosis.

Leslie A. Weaver, Ironwood, Mich.; Milwaukee Medical College, 1901; died November 20, aged 69, of cerebral thrombosis.

John Michael Wilson, Brunswick, Mo.; National University of Arts and Sciences Medical Department, St. Louis 1914; served during World War I; died in the Woodland Hospital Moberly, November 27, aged 58, of coronary occlusion.

Samuel Clyde Wilson Ⓢ Oxford, Pa.; Baltimore Medical College, 1908; found dead November 1, aged 63, of cardiac thrombosis.

Leopold Walter Wuesthoff, Richmond, Calif.; Sioux City College of Medicine, Sioux City, 1903; died November 20, aged 71, of bronchopneumonia and coronary heart disease.



LIEUT. (JG) PHILIP WILLIAM CAREY
(MC), U.S.N.R., 1917-1944



CAPT. RUBIN EVANS
M. C., A. U. S., 1916-1944



CAPT. IRVING ROBERT TEITELBAUM
M. C., A. U. S., 1912-1944

Henry M. Stadt, Glendale, Calif.; St. Louis College of Physicians and Surgeons, 1893; died in Los Angeles November 27, aged 74, of cerebral hemorrhage.

Robert Brown Stille Ⓢ Many, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1930; interned at the Charity Hospital of Louisiana, New Orleans; for many years director of the Sabine State Bank and Trust Company, resigning in April 1944; died December 26, aged 39, of heart disease.

John Magruder Sutton, Lincoln, Kan.; University Medical College of Kansas City, Mo., 1908; died in the Ellsworth Hospital, Ellsworth, November 22, aged 70, of chronic nephritis and uremia.

Murray Tate, Memphis, Tenn.; University of Tennessee Medical Department, Nashville, 1910; served during World War I; died in the Veterans Administration Facility November 27, aged 62, of cerebral hemorrhage and hypertension.

Charles Curtice Taylor Ⓢ Cooper, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1894; for three years medical examiner for the Selective Service Board; served as city health officer of Cooper, and county health officer of Delta County; died December 1, aged 73, of diabetes mellitus and ascites.

David Armstrong Taylor, San Francisco; Milwaukee Medical College, 1906; assistant clinical professor of obstetrics and gynecology emeritus at the University of California Medical School; died in the Stanford Hospital January 2, aged 74, of coronary occlusion.

Robert Kirk Young, Detroit; Detroit College of Medicine; 1894; veteran of the Spanish-American War and World War I; died November 25, aged 73, of coronary thrombosis.

KILLED IN ACTION

Philip William Carey, Brookline, Mass.; Harvard Medical School, Boston, 1943; served an internship at the Hartford Hospital, Hartford, Conn.; commissioned a lieutenant (jg) in the medical corps, U. S. Naval Reserve, on April 13, 1943; ordered to St. Albans, N. Y., and later to Camp Lejeune, North Carolina; attached to the first marine division, medical corps, first tank battalion; died in the Pacific area Sept. 16, 1944, aged 27, of a gunshot wound of the chest.

Rubin Evans.—The photograph of Dr. Evans was obtained after publication of his obituary in *The Journal*, January 13, page 117.

Irving Robert Teitelbaum, New York; Universität Basel Medizinische Fakultät, Switzerland, 1937; member of the American Medical Association; interned and later clinical assistant in medicine at the Hospital for Joint Diseases; commissioned a first lieutenant in the medical corps, Army of the United States, on April 11, 1942, later promoted to captain; killed in action in the European area Aug. 8, 1944, aged 32.

Bureau of Investigation

MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act, and in cases in which they refer to drugs and devices they are designated DDN] and foods, FN]. The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consignee, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment]

Bi-Sal Tablets—Oxford Products, Inc., Cleveland Shipped April 7, 1942 Composition in each tablet $\frac{1}{2}$ grain of phenolphthalein, and unnamed amounts of extracts of plant drugs, including nux vomica and a laxative as well as an extract of bile Misbranded in that the description "Panogestic Enzymes with Bile Salts Compound" was misleading since the product was essentially a laxative and its physiologic activity was due principally to phenolphthalein which is neither an enzyme nor a bile constituent, but a coal tar derivative Also misbranded because of a statement falsely representing that the nostrum would be an effective treatment of gallbladder and bile duct infection Further misbranded because labeling failed to give adequate directions for use or to warn that a laxative should be taken only occasionally when needed—[DDN J, FDC 837, December 1943]

Ecz all Germicide for the Skin—Adolph F. Frick, San Francisco Shipped April 3, 1941 Composition small amounts of a phenolic compound and free ammonia with alcohol and water Adulterated because strength differed from what it purported to possess, misbranded in that it was not a germicide or a pain reliever as represented by its name, that it consisted of two or more ingredients, though the label did not give the common or usual name of each and that the label did not bear adequate directions for use—[DDN J, FDC 854 May 1944]

Hanford's Balsam of Myrrh—G C Hanford Mfg Company, Syracuse, N Y Shipped April 11 and May 19, 1942 Composition essentially alcohol water, myrrh, benzoin and chlorothymol Misbranded because labels falsely represented it to be efficacious in treating sprained ankle, frostbite athlete's foot minor skin irritations cuts and bruises, among other things—[DDN J, FDC 834, December 1943]

Hyde Brand Vitamins A, B₁, D, G Capsules—McCambridge and McCambridge Company, Washington, D C Shipped April 18, 1942 Composition not more than 750 U S P units of vitamin D, and only inconsequential amounts of vitamin G per capsule, whereas label claimed that product contained 1,000 units of vitamin D per capsule and represented it as an important source of vitamin G Hence adulterated and misbranded—[DDN J, FDC 877 May 1944] Also misbranded under provisions of the law applicable to foods as reported in F V J 4700

Indian Antiseptic Hair and Scalp Stimulator—Adolph F. Frick, San Francisco Shipped April 3, 1941 Composition essentially small proportions of a phenolic compound and free ammonia alcohol and water Misbranded because name and symbols on label falsely represented that product was of Indian origin and also would be effective in stimulating hair and scalp, treating dandruff, falling hair, eczema and like conditions Also misbranded because not accurately labeled as to quantity of contents, and further, because label did not bear common or usual name of each active ingredient—[DDN J, FDC 854 May 1944]

McDades Prescription—Allen & Co, Inc St Louis, and John G Ayars Shipped between Sept 18 and Oct 1 1941 Composition essentially extracts of plant drugs including a laxative and a bitter drug, glycerin, alcohol and water Misbranded because label claims "Vegetable Alternative—An Aid in the relief of pain and discomfort arising from certain Rheumatism and Catarrhal affections" were false and misleading Also misbranded because label did not give adequate directions for use, particularly as to duration of administering it—[DDN J, FDC 855 May 1944]

Menostrex—Rex Laboratory, Nashville, Tenn Shipped Dec 22 1941 Composition in each capsule 3.43 grains of quinine sulfate and 0.35 grain of potassium permanganate Misbranded because of false label representation that it was an effective treatment for painful scanty or functionally delayed menstruation, and was a scientific preparation—[DDN J, FDC 855, December 1943]

More Pep—Allen & Co, Inc, St. Louis and John G Ayars Shipped between Sept 18 and Oct 1, 1941 Composition essentially extracts of plant drugs including nux vomica and a laxative drug a small proportion of an arsenic compound, with water, alcohol and sugars Misbranded because name was misleading in representing that the drug would give the user "more pep" Further misbranded because falsely represented as being a sexual stimulant and because label failed to warn that not more than the recommended dosage should be taken (since the mixture contained strychnine and arsenic compound) that frequent continued or prolonged use of the drug might result in serious injury, and that use by elderly persons might be especially dangerous—[DDN J, FDC 855 May 1944]

Q-T—Alfred Pharmacal Company, Cleveland Shipped May 22 and July 4, 1942 Labeled in part "Q-T For Adults Only, Contains Gold and Sodium Chloride and Ammonium Chloride . . . This preparation was formerly called Quits" Composition 0.16 grain of gold and sodium chloride and 6.3 grains of ammonium chloride per fluid ounce—[DDN J, FDC 859 May 1944]

Ru-Ma-Dol—Allen & Co, Inc, St. Louis and John G Ayars Shipped between Sept 18 and Oct 1 1941 Composition essentially sodium salicylate and extracts of plant drugs, including an alkaloidal one, glycerin, water and alcohol Misbranded because falsely represented in labeling to be effective in the cure, mitigation treatment or prevention of rheumatism neuralgia, neuritis and swelling and in the relief of symptoms of these conditions—[DDN J, FDC 855, May 1944]

Stevens Concentrated Mineral Water—E A Stevens Dawson Springs, Ky Shipped March 2, 1942 Composition essentially water, magnesium and calcium sulfates, and small amounts of sodium sulfate, sodium chloride, calcium carbonate and potassium chloride Misbranded because, though product was a laxative, label failed to give adequate directions for use, and instead provided for continuous administration whereas a laxative should not be used thus, also misbranded because labeling failed to warn that a laxative should not be taken when symptoms of appendicitis are present, or that frequent or continued use of such a product might result in dependence on a laxative Further misbranded because label statements suggested that product would be efficacious in treating liver, kidney, stomach and blood disorders dropsical trouble rheumatism, malaria, and many other ailments—[DDN J, FDC 814 December 1943]

Texas Crystals—Loje Distributing Company, Fairmont, W Va Shipped April 8 and May 1, 1942 Composition hydrated sodium sulfate with traces of other inorganic salts Misbranded because, though it was a laxative, its label failed to warn that it should not be taken in cases of nausea, vomiting, abdominal pain or other symptoms of appendicitis, and that frequent or continued use might result in dependence on laxatives Also misbranded because label represented that preparation contained substantial amounts of sodium sulfate, calcium carbonate, sodium chloride, magnesium carbonate, potassium chloride and sodium carbonate, whereas none of these was present in a substantial amount except the sodium sulfate—[DDN J, FDC 812, December 1943]

White Cross All Purpose First Aid Kit—American White Cross Laboratories Inc New Rochelle, N Y Shipped March 16, 1942 Composition gauze and adhesive strips which were not sterile but contaminated with viable aerobic and anaerobic or facultative anaerobic micro organisms Adulterated because below standard of purity and quality represented, misbranded because not sterile and because outside container did not accurately declare quantity of contents—[DDN J, FDC 876, May 1944]

STERILATOR LABORATORIES BARRED

The Post Office Department Rules on Contraceptive Devices

Most of the cases in which the Post Office Department debar medical devices or treatments from the mails are based on charges of perpetrating a fraud on the public. There are, however, other reasons for denying to individuals or concerns the use of the mails. One is the transmission by this means of devices or medicines for contraceptive use.

Such was the charge against the Sterilator Laboratories, which operated from a number of addresses, including Detroit and Dearborn, Mich, Yonkers, N Y, and Chicago, with a Harold G Johnson as promoter. This company sold through the mails outfits consisting of a vaginal syringe and a jar of jelly-like material. So-called diaphragms for use as a means of covering the cervix uteri were furnished as a separate item.

Investigation showed that Johnson, when renting a postoffice box in Yonkers, described himself as "Dr.," and that later, though retaining that box, he directed the Yonkers postmaster to forward his mail to Dearborn, Mich. Still later he gave the same order regarding mail addressed to him at Chicago.

The label of the jar of jelly-like substance that he sent out with the vaginal syringe stated that the mixture contained tragacanth, karaya, glycerin, boric, citric, tartaric, lactic and acetic acids, potassium alum, "antimol" (whatever that was) and oil of rose compound.

In July 1944 the Post Office Department, after due investigation, called on the concern to show cause at a hearing in Washington why mail addressed to it at its various locations should not be returned to the senders or directed to the Dead Letter Office at Washington, as Johnson's business had been found to be a scheme for delivering through the mails instruments and substances intended for preventing conception.

Johnson neither filed an answer to the charges nor appeared at the hearing of the case. On that occasion the Post Office

Department presented details of the contraceptive treatment and the correspondence regarding it that the Sterilator Laboratories and its promoter sent through the mails to an inquirer. Expert medical testimony introduced by the government at the hearing showed that the outfit and diaphragm which Johnson sent out were not only well adapted for the prevention of conception but could scarcely have any other purpose. It was further brought out that the circular matter mailed by Johnson declared that the articles he sold were "For Physicians Exclusively." On the contrary, the Post Office Department produced evidence that in the actual conduct of the enterprise Johnson's articles were habitually furnished to lay persons through the mails for the purposes mentioned. Accordingly, the Post Office, on Oct. 3, 1944, issued an order debarring the Sterilator Laboratories and H. G. Johnson (under his various designations) from further use of the mails.

Correspondence

METATHYROID-ALLOXAN DIABETES

To the Editor:—De Finis and Houssay (Tiroides y diabetes en el perro, *Rev. Soc. argent. de biol.* 19:94 [June] 1943) found that: 1. The administration of 0.5 Gm. of thyroid powder per kilogram of body weight to normal dogs does not produce diabetes. 2. The same treatment may produce diabetes in dogs with the pancreas reduced to one fifth or less in size by previous operation but with normal glycemia up to the thyroid administration. 3. The thyroid induced diabetes may last not more than the thyroid treatment (thyroid type) or be a permanent one (metathyroid type). 4. Treatment with thyroid may also produce diabetes in dogs with a pancreas otherwise injured by previous treatment with extracts of the anterior hypophysis. According to the Buenos Aires letter in your issue of Dec. 11, 1944 these facts have been insisted on in a recent lecture by Dr. Houssay, who stated that "prolonged administration of thyroid does not cause diabetes in normal dogs, whereas it does cause this disease in dogs with normal glycemia and a pancreas experimentally reduced to 2.5 or 2.3 Gm." and that "the disease may be of the thyroid type, which lasts only during administration of thyroid, or of the metathyroid type, which persists even after discontinuation of the thyroid treatment."

As previously reported (Carrasco-Formiguera, R.: *J. Lab. & Clin. Med.* 29:510 [May] 1944), one of a personal series of dogs injected with diabetogenic doses of alloxan, with a previous normal dextrose metabolism, following the intravenous injection of 100 mg. of alloxan per kilogram of body weight, developed mild diabetes. A biopsy taken on the same day as a diabetic dextrose tolerance test failed to show any pathologic changes in the islets of Langerhans or in any other pancreatic structures. The attack of diabetes was transient. Further observation and experiment on the same animal have shown that the restoration of a normal dextrose metabolism, after a short diabetic period, seemed to be definitive, as shown by several normal dextrose tolerance tests and absence of glycosuria for eleven months. Eleven months after all evidence of diabetes had disappeared, thyroid administration was started and was carried on for more than three months at doses progressively increased from 12.5 up to 75 mg. per kilogram of body weight. Shortly after beginning and several times during the administration of thyroid, dextrose appeared in the urine in an irregular way and in amounts ranging from slight traces up to 0.9 per cent. During the last weeks of thyroid administration and for about ten days after its discontinuance Benedict positive tests were more frequent. A few days later fasting blood sugar was 195 mg. per hundred cubic centimeters. About twenty days after no thyroid had been given, fasting blood sugar was 240 mg. per hundred cubic centimeters and a dextrose tolerance

test gave distinctly diabetic figures. For the last two weeks, up to the moment this communication is being written, nearly one month after the discontinuation of thyroid administration, sugar excretion has ranged between 2.5 and 3 Gm. per kilogram in twenty-four hours.

While I am preparing a more detailed report of this experiment, waiting for more time to elapse before definitely accepting the thyroid induced diabetes as a permanent one and experimenting on similar lines with a wider number of animals, I have thought that this early and rather informal report might be of some interest to the readers of THE JOURNAL, mainly on account of two points: First, in agreement with Houssay's findings, thyroid administration, which does not produce diabetes in the normal dog, has induced this disease in a dog which had a normal dextrose metabolism and a pancreas that had been previously injured in some way (in this particular case by alloxan) to a degree that also was not enough by itself to cause permanent diabetes. Second, it is possible for the pancreas to be injured in such a way and to such a degree (in this particular case by alloxan) that the damage suffered, without being accompanied by any noticeable anatomic change, may in a way be the equivalent of the surgical reduction of pancreatic tissue down to about one fifth or even less of the normal size of the organ.

R. CARRASCO-FORMIGUERA, M.D., Puebla, Pue., Mexico.
Professor of Pathologic Physiology, Laboratory
of Physiology, University of Puebla.

IMMEDIATE CHOLANGIOGRAPHY

To the Editor:—The diagnosis of intraductal lesions in the common duct during operation has been a difficult problem. During the past six years I have found a relatively easy method of accurate diagnosis and, since the method has been substantiated by examinations in 168 consecutive operations performed up to May 1943 as reported to the Surgical Section of the California Medical Association meeting on May 3, 1943, I feel that it should be presented for further consideration. An aqueous solution of iodine (hippuran) in quantities from 8 to 15 cc. is injected through a 24 or 26 gage needle inserted obliquely through the wall of the common duct. An aqueous solution is miscible with bile; therefore it is not necessary to withdraw an equal amount of bile before injection. The injection is made after the common duct has been exposed. A cassette is placed under the patient before the patient is draped for operation. Immediately after the injection has been made an x-ray picture is taken (usually on a 14 by 17 film) at a focal distance of approximately 18 inches; a sterile towel is placed over the focal site and marked with a dot of merthiolate solution. During the period that the x-ray film is being developed the gallbladder is removed and by the time this has been accomplished the technician has returned with the developed film. Therein may be seen obstructive lesions (gallstones, polyps, carcinoma, parasites) or, if the duct is normal, the iodine solution enters the duodenum readily and there is little evidence of obstruction or dilatation of the choledochus. If dyskinesia exists and temporary obstruction occurs it is usually characteristic on the x-ray film but if a subsequent film is taken fifteen or twenty minutes later the sphincter of Oddi has relaxed so that the iodine solution readily enters the intestine.

The success of this method diagnostically and the ease of administering the opaque solution without opening the common duct warrant its widespread use by the general surgeon. Herein lies its great value.

Obstructions of the common duct have been overlooked in approximately 8 per cent or more of all patients being operated on for gallbladder disease during the past twenty years. This

method of immediate cholangiography resulted in only 1 instance of erroneous diagnosis in the 168 cases reported up to May 3, 1943 and the 108 cases performed since then. Its diagnostic value is thereby established, in my opinion.

STANLEY H. MENTZER, M.D., San Francisco.

DIAGNOSIS OF HERNIATION OF LUMBAR INTERVERTEBRAL DISKS

To the Editor:—In the paper on "Diagnosis of Herniation of Lumbar Intervertebral Disks by Neurologic Signs" by Dr. J. Jay Keegan, published in the Dec. 2, 1944 issue of *THE JOURNAL*, reference is made to a manipulative procedure the origin of which could not be found, according to the author. May I call to your attention that this manipulative procedure was described in detail by Dr. Bror S. Troedsson in an article entitled "Lumbosacral Derangement and Its Manipulative Treatment," published in the *Archives of Physical Therapy* (18:10 [Jan.] 1937). Dr. Troedsson also demonstrated his procedure before the annual meeting of the American Congress of Physical Therapy on Sept. 8, 1936, when his paper was read. It seems to me that Dr. Troedsson should receive credit for the manipulative procedure so well described and illustrated in the first part of Dr. Keegan's article.

RICHARD KOVACS, M.D., New York.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Compensation of Physicians: Knowledge of Physician of Third Party's Promise to Pay as Affecting Patient's Liability.—While a customer in a so-called ten-cent store Mrs. Iverson slipped and fell. The store manager directed her to go to the plaintiff physician, who at the expense of the store would render the necessary care. Mrs. Iverson then proceeded with her husband to the plaintiff's office. Prior to their appearance, however, the physician had been advised by some one connected with the store of the accident and that Mrs. Iverson was on her way to his office. Examination by the physician indicated that the patient had sustained a fracture of a bone in the knee and that the injury would require "rather careful and prolonged treatment." When this fact was determined the physician remarked to the patient "that it was fortunate that she fell in the store and not outside because had she fallen outside the store the cost to her of having the injury treated would have been \$100." The physician then proceeded to institute the required course of treatment. At no time during the treatment, except on the very last visit of the patient to his office, did he indicate that he expected compensation from the patient or her husband. At the patient's last visit, however, he suggested that the patient and her husband "give him \$50 because the insurance company would pay him no more than \$15," which the Iversons refused to do. Subsequently the physician sued husband and wife to recover the reasonable value of the professional services he had rendered. From an adverse judgment the plaintiff appealed to the Supreme Court of South Dakota.

The physician contended that on the treatment of a patient by a physician in the absence of an express contract between the physician and the patient to pay for such treatment there arises an implied contract that the patient will pay the physician the reasonable value of the services performed, even though those services are rendered at the request of the third party. With that general statement of the law, said the Supreme Court, there can be no serious dispute; but the question here presented is somewhat different, namely, if there is an agreement between the patient and a third person that the third person will pay for services rendered the patient by the physician and that the patient will not be obligated to the physician, and the physician has knowledge of this agreement and treats the patient at the

request of the third party without any express agreement with the patient relating to his fee, does there arise an implied contract obligating the patient to pay the physician the reasonable value of the treatment? SDC 10.0601 defines an implied contract as one "the existence and terms of which are manifested by conduct." We think it clear, continued the Supreme Court, that under this definition, absent any other facts, there arises an implied contract that the patient will pay the physician the reasonable value of services performed, though such services are performed at the request of a third party. But in this case we are confronted with conduct which in our opinion refutes the existence of an agreement by the defendants to pay for the services performed. Clearly the testimony of the patient establishes an agreement on behalf of the store to assume full responsibility for payment of the physician. The physician's statement to the patient that it was fortunate she fell in the store and not outside because had she fallen outside the cost to her of having the injury treated would have been \$100 supports a belief that the physician knew of the existence of the agreement on behalf of the store to assume full responsibility for his fee, and such belief finds further support in the fact that plaintiff was advised of the accident by the store before the patient consulted the physician and performed the services at the request of the store. When plaintiff proceeded to treat the patient knowing of the agreement between her and the store and at the store's request, such conduct, rather than implying an understanding between physician and patient that the patient will pay the reasonable value of the services performed, implies, in the court's opinion, an agreement by the physician to perform the services according to the conditions and terms under which he is consulted and asked to perform the service. The rule is stated in *Garrey v. Stadler*, 67 Wis. 512, 30 N. W. 787, 789, 58 Am. Rep. 877, as follows:

As the law in such case implies a promise to pay what the service is reasonably worth on the part of the person for whom such service is performed, such implied promise must be overcome by evidence showing that the person performing the service knew that there was a different arrangement for the payment of such service, to which he expressly or impliedly assented.

We believe, continued the court, the evidence of record fairly establishes that plaintiff knew of the arrangement between the patient and the store for the payment of his services, and when he performed the services at the request of the store, without advising or suggesting to the Iversons that he would hold them responsible, he thereby impliedly assented to the arrangement of which he was advised.

The judgment which in effect denied the physician recovery against the patient and her husband was affirmed—*Ophcim v. Iverson*, 16 N. W. (2d) 440 (S. D., 1944).

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL*, February 17, page 420.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS. Part III. Various centers, June. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: New York, June 8-9. Final date for filing application is March 12. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF OBSTETRICS & GYNECOLOGY: Part II. Oral. Atlantic City, June 13-19. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

AMERICAN BOARD OF OPHTHALMOLOGY: New York, June 13-16; Chicago, Oct. 4-6; and Los Angeles, January. Sec., Dr. S. Judd Beach, 56 Erie Rd., Cape Cottage, Me.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Part I. Oral and Written. New Orleans, Sept. 28-29, New York, Oct. 5-6, Chicago, Oct. 12-13 and San Francisco, Oct. 19-20. Final date for filing application is August 1. Sec., Dr. G. A. Caldwell, 3503 Prichard St., New Orleans 15.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, June 5-8. Final date for filing application is March 1. Chicago, Oct. 3-6. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City, Ia.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: Chicago, May. Final date for filing application is Feb. 23. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington 6, D. C.

AMERICAN BOARD OF RADIOLOGY: Oral. New York, June 3. Final date for filing application is May 1. Sec., Dr. B. R. Kirklin, 102 110 Second Ave. S.W., Rochester, Minn.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1935 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

14:133-156 (Dec.) 1944

- Surgery in the Aged. W. F. Scott.—p. 133.
Medicine of the Past and of the Future. E. V. Caldwell.—p. 135.
Fibrocystic Diseases of Pancreas. W. A. Daniel Jr.—p. 138.
Problems of Diabetes Mellitus and Their Management. L. S. Smelo.—p. 141.
Prevention of Pertussis as Public Health Measure. Ruth Berry and Thyra Christensen.—p. 146.

American Heart Journal, St. Louis

28:549-661 (Nov.) 1944. Partial Index

- Influence of Autonomic Imbalance on Human Electrocardiogram: I. Unstable T Waves in Precordial Leads from Emotionally Unstable Persons Without Organic Heart Disease. M. H. Wendkos.—p. 549.
Relationship of Blood Viscosity to Intensity of Heart Murmurs. S. Garb.—p. 568.
Electrocardiographic Studies in Neurocirculatory Asthenia. R. B. Logue, J. F. Hanson and W. A. Knight.—p. 574.
*Rupture of Mitral Chordae Tendineae: Clinical and Pathologic Observations on 7 Cases in Which There Was No Bacterial Endocarditis. O. T. Bailey and J. B. Hickam.—p. 578.
*Effect on Blood Pressure of Normal Persons and Hypertensive Patients of Glyceryl Trinitrate, Sodium Nitrite, Erythrol Tetranitrate and Mannitol Hexanitrate. J. C. Weaver, J. H. Wills and H. C. Hodge.—p. 601.
Congestive Heart Failure and Electrocardiographic Abnormalities Resulting from Excessive Desoxycorticosterone Acetate Therapy in Treatment of Addison's Disease. J. H. Currans and P. D. White.—p. 611.
Interpretation of Axis Deviation and Ventricular Hypertrophy. E. Goldberger.—p. 621.
Value of Roentgenologic Examination of Heart. M. L. Sussman and A. Grishman.—p. 647.
Observations on Mechanism of Physiologic Third Heart Sound. J. R. Smith.—p. 661.

Rupture of Mitral Chordae Tendineae.—In the last 2,400 necropsies at the Peter Bent Brigham Hospital, according to Bailey and Hickam, there were eleven instances of rupture of the mitral chordae tendineae. Four were associated with bacterial endocarditis involving this valve. The other 7 patients presented no evidence of bacterial endocarditis and no history of severe trauma to the chest. In each of these cases disease of the valve and its chordae tendineae appeared to antedate the rupture. It is difficult to state in most instances what was the nature of the disease, but in some it was rheumatic fever. There was no difference in frequency of rupture of the chordae tendineae to either of the cusps. In 3 cases the ruptured chordae tendineae were attached to the anterior cusp, in 3 to the posterior cusp, and in 1 case one chorda tendinea of each cusp was ruptured. It has been suggested that accidental cutting of chordae tendineae in opening the heart at necropsy has been confused with antemortem rupture by the pathologist. Especial care was taken in these cases to avoid this error. In several instances the free ends of the chordae tendineae were seen in the valve orifice before the ventricles were opened. Furthermore, the bulbous enlargements of the ends of the ruptured chordae tendineae and the character of the portions on the papillary muscles leave no doubt as to the antemortem nature of the process. The point of rupture lay close to the papillary muscle. The stumps consisted of hyalinized and partially degenerated connective tissue with a covering of endothelium. Scarring extended into the subjacent myocardium. The corresponding papillary muscles underwent atrophy if all their chordae were broken but showed hypertrophy if a number were left attached. Rupture of the chordae must have allowed a high degree of mitral regurgitation. All hearts were dilated

and hypertrophied. The histories did not indicate that external violence or vigorous exertion was an etiologic factor in rupture. The symptoms after rupture of the mitral chordae tendineae are those of congestive heart failure, which may be insidious or abrupt in its onset and progressive or remittent in its course. Months or years may elapse between rupture and congestive failure. Rupture of the chordae is suggested by the sudden appearance of a loud, precordial systolic murmur, maximal at the apex and left sternal border, where it is usually accompanied by a thrill. An apical diastolic murmur may also be present. Auricular fibrillation sometimes occurs. Roentgenograms show cardiac enlargement, and fluoroscopy may demonstrate systolic pulsation of the left atrium. The differential diagnosis includes bacterial endocarditis, rupture of a valve cusp, rupture of a papillary muscle and perforation of an infarcted interventricular septum.

Effect of "Nitrite" Drugs on Blood Pressure.—Weaver and his associates gave glyceryl trinitrate, sodium nitrite, erythrol tetranitrate, mannitol hexanitrate and a placebo to normal and hypertensive subjects and made blood pressure measurements at brief intervals until the effect of the drug was over. Each of the 38 subjects received one or more of the substances and most received all four nitrite drugs. The patients were led to believe that the blood pressure measurements were a part of their routine management. Fifty-one per cent of the subjects who were given the nitrite drugs had a fall of systolic pressure, and 23 per cent had a lowering of diastolic pressure. The systolic fall was almost always greater than the diastolic. None had a fall in blood pressure after the administration of a placebo. The amount of the fall in blood pressure in hypertensive patient varied greatly, but the averages were as follows: glyceryl trinitrate 16/4 mm. of mercury; sodium nitrite 21/1 mm., erythrol tetranitrate 14/5 mm. and mannitol hexanitrate 12/4 mm. In normal subjects the average fall in blood pressure was as much as 10 mm. less than the corresponding figure for the hypertensive. The period between the administration of the drug and the beginning of the fall in blood pressure was variable. For glyceryl trinitrate this interval averaged 2 minutes, for sodium nitrite 7 minutes, for erythrol tetranitrate 35 minutes and for mannitol hexanitrate 55 minutes after the drug was given. The average duration of blood pressure lowering was as follows: glyceryl trinitrate 20 minutes, sodium nitrite 62 minutes, erythrol tetranitrate and mannitol hexanitrate about the same, 256 and 252 minutes respectively. With the last two drugs there was wide variation in the duration.

American Journal of Diseases of Children, Chicago

68:301-368 (Nov.) 1944

- *Infectious Lymphocytosis. D. L. Finucane and R. S. Philips.—p. 301.
*Hereditary Periodic Paralysis in Family Showing Varied Manifestations. C. P. Oliver, Mildred R. Ziegler and I. McQuarrie.—p. 308.
Sporadic Infections Due to Salmonella in Infants. E. Neter.—p. 312.
*Hemolytic Disease of Fetus and Newborn Infant, with Special Reference to Transfusion Therapy and Use of Biologic Test for Detecting Rh Sensitivity. A. S. Wiener, I. B. Wexler and E. Gamrin.—p. 317.

Infectious Lymphocytosis.—Finucane and Philips describe an epidemic of 21 cases of infectious lymphocytosis which occurred in a children's sanatorium. The children ranged in age from 1½ to 5½ years. The leukocyte counts ranged from 22,500 to 120,000, with a relative lymphocytosis of 62 to 97 per cent. In the majority of the cases the total counts were over 40,000, while in 3 they were over 100,000; in all except 4 instances the percentage of lymphocytes was 85 or over, and in these 4 it was 62 plus. In none of the cases was there any symptom at the onset, the condition being discovered in every instance by routine blood counts. The average probable duration of the leukocytosis was approximately 4½ weeks, the longest 7 weeks and the shortest 2½ weeks. In the majority of cases eosinophilia appeared as the total count began to drop. In a few this occurred during the highest count and persisted for seven months. The authors believe that the cause of this condition is an infectious agent, but efforts to demonstrate a bacterial or virus cause in these cases were fruitless.

Hereditary Periodic Paralysis.—According to Oliver and his associates, periodic family paralysis is characterized by the periodic development of acute flaccid paralysis, which usually begins in the extremities and progresses toward the trunk. The

patient loses the power to move his limbs, but he can usually breathe, eat and speak freely, and the functions of his internal organs appear not to be disturbed. The deep reflexes of the affected extremities are absent at the height of the attack. After a period of time, usually a few hours, but in some instances two or three days, the patient recovers from the attack spontaneously. Another attack may occur within twelve to twenty-four hours or after a longer interval. During the attacks the levels of serum potassium and inorganic phosphorus tend to be low, while during periods of freedom they are normal. The attacks are often preceded by excessive exercise, fatigue or ingestion of an excess of carbohydrates during the previous day. Attacks can usually be induced in persons who have the potentiality for them by the administration of large amounts of carbohydrate or by the use of certain agents, such as insulin and epinephrine, which are known to lower the level of serum potassium. The familial occurrence of periodic paralysis has been recognized, according to Talbott, since the report of Shakhnowitsch in 1882. The authors present the pedigree of a family of Scandinavian ancestry, 16 members of which have had periodic attacks of paralysis. The trait behaves in this family as a mendelian dominant with full penetrance but with varied manifestations. The manifestations, as shown by the age of onset and the frequency, duration and severity of the attacks and the duration of the disease are as varied as those observed when nonrelated affected persons are compared.

Hemolytic Disease of Fetus.—According to Wiener and his associates, the usual method of demonstrating Rh sensitivity is to test the patient's serum for anti-Rh agglutinins, as was first done by Wiener and Peters. It was soon discovered that there is a high percentage of persons with Rh negative blood who are highly sensitive to the Rh factor whose plasma does not contain demonstrable anti-Rh agglutinins. These puzzling cases have been explained, at least in part, by the discovery that in addition to Rh antibodies that produce hemagglutination there are Rh antibodies able to combine specifically with Rh positive cells without producing a visible reaction. If Rh positive blood is mixed with serum containing antibodies of the latter type, the blood loses its capacity to be agglutinated by anti-Rh agglutinating serums, presumably because all the combining sites on the erythrocytes have been occupied. Because of this property of blocking the action of anti-Rh agglutinins, the new type of antibody has been named the blocking antibody. The blocking antibody has served to explain the hitherto puzzling lack of correlation between the titer of anti-Rh agglutinins and the severity of hemolytic disease in the infant. A biologic test of detecting Rh sensitivity was described by Wiener in 1942. This test has proved particularly useful for the prevention of hemolytic reactions to intragroup transfusion in the absence of the facilities or the time for carrying out tests for the Rh factor. The biologic test consists of intravenous injection of 50 cc. of blood to which the patient may be sensitive and comparison with the naked eye of the color of the patient's original citrated plasma with that of a comparable specimen taken one to one and one-half hours after the injection. If sensitivity is present the second sample of plasma will be distinctly darker, and not infrequently the patient will have a chill fifty to sixty minutes after the test is started, followed by a rise in temperature. In case of doubt an additional 50 cc. of blood may be injected and a third specimen of the patient's plasma obtained for comparison after one more hour. If the reaction to this test is negative, any quantity of blood from the same donor can be given without untoward effect. The authors describe some experiences with the application of the biologic test for the detection of sensitivity to the Rh factor caused by pregnancy. In a woman who had previously had repeated miscarriages, a negative biologic reaction proved that these were not caused by Rh sensitivity, even though her blood was Rh negative and her husband's was Rh positive. On the other hand, in a case involving a husband with Rh positive blood and a wife with Rh negative blood, who had had two stillbirths of obscure cause, a positive biologic test proved that isoimmunization was responsible, even though in vitro tests for anti-Rh agglutinins in the woman's serum had previously given negative results. Two cases of hemolytic disease of the newborn are

described in which transfusions of Rh negative blood were given. In 1 case the therapy was dramatically life saving, while in the second, in which the disease was apparently milder, the infant died of cholemia and kernicterus.

American Journal of Physiology, Baltimore

142:483-632 (Nov.) 1944. Partial Index

- Blood pH During Decompression. R. W. Clarke, C. Marshall and L. F. Nims.—p. 483.
Ischemic Compression Shock, with Analysis of Local Fluid Loss. H. D. Green, R. M. Dworkin, R. J. Antos and G. A. Bergeron.—p. 494.
Effects of Potassium on Synthesis of Acetylcholine in Brain. J. H. Welsh and Jane E. Hyde.—p. 512.
Production of Shock by Callierin. W. W. Westerfeld, J. R. Weisiger, B. G. Ferris Jr. and A. B. Hastings.—p. 519.
Isotopic Tracer Studies on Movement of Water and Ions Between Intestinal Lumen and Blood. M. B. Visscher, E. S. Fletcher Jr., C. W. Carr, H. P. Gregor, Marian S. Bushey and Dorothy E. Barker.—p. 550.
Survival of Dogs Treated with Neosynphrin During Production of Hemorrhagic Shock. D. F. Opyke.—p. 576.
Study on Conversion of Fibrinogen to Fibrin. K. C. Robbins.—p. 581.
Changes of Cerebral Circulation Induced by Labyrinthine Stimulation. E. A. Spiegel, G. C. Henny and H. T. Wycis.—p. 589.
Effect of Positive and Negative Intrathoracic Pressure on Cardiac Output and Venous Pressure in Dog. J. P. Holt.—p. 594.
Effect of L. Casei Factor ("Folic Acid") on Blood Regeneration Following Hemorrhage in Rats. A. Kornberg, H. Tabor and W. H. Sebrell.—p. 604.
Factors Influencing Phosphate Turnover in Muscle. J. Sacks.—p. 621.
Concentration of Potassium in Serum and Response to Vagal Stimulation in Dog. H. E. Hoff, D. G. Humm and A. W. Winkler.—p. 627.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

52:459-570 (Nov.) 1944

- *Congenital Absence of Lung (Agenesis) and Other Anomalies of Tracheobronchial Tree. C. F. Ferguson and E. B. D. Neuhauser.—p. 459.
Pulmonary Disease Associated with Megacosophagus. H. S. Weens.—p. 472.
Pulmonary Suppuration Secondary to Cardiospasm. I. Bird-Acosta.—p. 481.
*Rib Fractures in Atypical Pneumonia. R. M. Harvey.—p. 487.
Congenital Absence of Ribs. B. N. E. Cohn.—p. 494.
Routine Chest Roentgenography on Negro Inductees at Fort Benning, Georgia. E. R. Bowie and H. G. Jacobson.—p. 500.
Pseudomyxoma Peritonei: Report of Case with Unusual Roentgen Findings. C. G. Weig, E. C. Koenig and G. J. Culver.—p. 505.
Diverticulum of Stomach: Case Report. L. L. Frank.—p. 510.
Value of Venography in Varicose Veins, with Report of 3 Cases. A. E. Imler, M. G. Beaver and W. C. Sheehan.—p. 514.
Renal Dystopia Due to Intra-Abdominal Masses, with Review of Literature and Report of 5 Cases. H. R. Fishback Jr.—p. 521.
Effects of Repeated Irradiation of Gastric Region with Small Doses of Roentgen Rays on Stomach and Blood of Dogs. W. C. Hueper and J. deCarvajal-Forero.—p. 529.
Comparative Studies in Arrangement of Radiation Beams: Three Identical Circular Beams Disposed Symmetrically. C. W. Wilson.—p. 535.
Photoroentgenographic Technique and Dark Room Procedure Used at Army Recruiting and Induction Station, New Haven, Conn. C. C. Verstandig and C. W. Amsworth.—p. 547.

Congenital Absence of Lung.—Ferguson and Neuhauser report 5 cases of agenesis of the lung encountered at the Children's Hospital in Boston during the past six years. In all of these the condition was diagnosed during life by bronchoscopy followed by iodized oil roentgenograms of the tracheobronchial tree. These 5 cases of agenesis of the lung illustrate the fact that this deformity is not incompatible with a normal existence, since 4 of the 5 patients are living normal lives and are not handicapped by their defect. All 5 cases showed additional congenital anomalies. In the first case the left hand was absent. In the second there were a patent ductus arteriosus, accessory spleen with hypoplasia and hypoplasia of the kidney and liver. In the third case there was a congenital malformation of the external ear. In the fourth there were congenital anomalies of the vertebrae and ribs noted by the roentgenograms. In the fifth there was a harelip and a complete cleft palate. The cases in the literature also have shown frequent associations of other congenital anomalies. The authors feel that an inherent defect in the germ plasma is probably responsible for this as well as the other associated congenital anomalies. The symptoms are so inconstant or lacking that x-ray studies plus bronchoscopy with injection of the tracheobronchial tree with iodized oil are the recommended methods for diagnosis. The prognosis should always be guarded, although the condition is compatible with longevity. In 3 of the cases reported in the literature the age was well over 50 years. Of

the 5 patients whose histories are presented 4 are living normal lives and the oldest is 8 years old. The authors stress that in cases of persistent emphysema or atelectasis, of supposed unresolved pneumonia or of recurrent pneumonia in the same lobe, congenital anomalies of the tracheobronchial tree must be considered.

Rib Fractures in Atypical Pneumonia.—In the course of an epidemic of so-called virus or atypical pneumonia during the winter of 1942-1943 several instances of fractured ribs, according to Harvey, were noted. A review of the literature on atypical pneumonia did not reveal previous descriptions of the occurrence of rib fractures. A consecutive series of 500 cases of atypical pneumonia occurring in a station hospital was reviewed. In 19 there was evidence of recent rib fractures. In 1 a history of trauma was elicited, but in all others trauma was excluded as a possible etiologic factor in the production of the fractures. A review of the original roentgenogram would usually disclose a definite fracture line. The appearance of the fracture line and the subsequent development of callus left no doubt as to the fracture having occurred recently. In 10 of the 18 cases the fractures were not recognized until a routine review of the entire series was made in a definite search for them. In half of the patients the fractures were multiple. All fractures occurred in the anterior axillary or axillary line. It has been postulated that this is due to the opposing forces of the serratus anterior and externus obliquus abdominis muscles. The occurrence of rib fractures was not related to the severity of the pneumonia. Associated with atypical pneumonias is a severe, dry, irritating cough which is probably a factor in the production of the fractures. Excessive chest pain occurring in cases of atypical pneumonia should direct the search of the roentgenologist toward this complication in order that the fractures may not be overlooked. This complication may explain many supposed cases of pleurisy in atypical pneumonia.

American Review of Soviet Medicine, New York

2:1-96 (Oct.) 1944

- Refrigeration Anesthesia for Amputations. S. S. Yudin.—p. 4.
Reconstruction of Male Genitalia. A. P. Frumkin.—p. 14.
Experimental and Clinical Lobar Pneumonia. A. D. Speransky.—p. 23.
Pathogenesis and Treatment of Lobar Pneumonia. E. M. Ginsburg.—p. 28.
New Method for Treatment of Traumatic Shock. E. A. Asratyan.—p. 37.
Rehabilitation of Nervous System in War Trauma. A. R. Luria.—p. 44.
Tissue Therapy in Ophthalmology. V. P. Filatov.—p. 53.

American Review of Tuberculosis, New York

50:365-418 (Nov.) 1944

- Outlook for Tuberculosis Control in Civilian Population. T. Parran.—p. 365.
Problem of Tuberculous Veteran. L. I. Dublin.—p. 375.
Tuberculosis Problem of Veterans Administration. R. A. Wolford.—p. 380.
Program for Tuberculous Patients Among World War II Veterans. T. O. Kraebel.—p. 391.
Tuberculosis and War: Summary. E. R. Long.—p. 401.
Indispensability of Routine X-Ray Examinations of Chest in General Clinic. R. G. Block and W. B. Tucker.—p. 405.
Promizole in Tuberculosis: Effect on Previously Established Tuberculosis of Guinea Pigs of 4,2'-Diaminophenyl-5'-Thiazolylsulfone (Promizole). W. H. Feldman, H. C. Hinshaw and F. C. Mann.—p. 418.

Anesthesiology, New York

5:551-659 (Nov.) 1944

- Nitrous Oxide Centennial. R. M. Waters.—p. 551.
*Stimulation of Wound Healing: New Use for Powdered Blood Cells. T. H. Seldon, J. S. Lindy and R. C. Adams.—p. 566.
Therapeutic and Diagnostic Nerve Blocking: Plan for Organization. E. A. Rovenstine and S. G. Hershey.—p. 574.
Endotracheal Anesthesia for External Laryngeal Surgery. P. H. Holinger and W. H. Cassels.—p. 583.
Anesthesia of Excised Chick Hearts and Its Relation to Myogenic and Neurogenic Origin of Heart Beat. W. Seifriz and M. H. Ross.—p. 589.
Comparative Study of Action of Various Anesthetic Agents on Muscles of Colon in Dog. E. J. Van Lierre, D. W. Northrup and J. C. Stickney.—p. 597.
Procaine-Sulfonamide Antagonism: Evaluation of Local Anesthetics for Use with Sulfonamide Therapy. C. C. Pfeiffer and C. W. Grant.—p. 605.

Powdered Blood Cells for Wound Healing.—Seldon and his associates of the Mayo Clinic used powdered blood cells in the treatment of wounds. One bottle of powdered blood cells was set aside for each patient to avoid cross contamination from

the wounds of 1 patient to another. Dressings of powder blood cells were applied every one to three days, the frequency depending on the type of wound. If the wound was moist at there was considerable serum or seropurulent drainage, the dressings were applied. Cells were applied each time the dressings were changed. Certain wounds had a urea-like odor after application of powdered blood cells. Occasionally during the first five to seven days the application of the powdered blood cells produced a burning and painful sensation. In the first five to seven days there is no appreciable growth of tissue. The time of first growth and of the disappearance of the pain is almost simultaneous. Therefore it is felt that the growth of new tissue may cover the little nerve fibril endings and thus prevent direct stimulation of the nerves. The base and wall of the ulcers or wounds do not change during the first five days of treatment with these cells. If the ulcers are old they are grayish red and many times appear more or less devitalized they continue to look this way for the first few days of treatment. The first few applications of powdered blood cells tend to draw from the underlying tissues a quantity of serum. The cells take up this serum and become moist to a point that a thin gelatinous liquid is present. Sometimes this liquid has been suspected of being purulent drainage, although many cultures have proved it otherwise. After five to seven days of treatment there is usually a slow and steady ingrowth of both granulation tissue and epithelium. In some cases the granulation tissue has been so exuberant that it had to be burned down with silver nitrate to allow the epithelium to cover it. The healing of wounds or ulcers has usually required from three to five weeks. Although dried blood cells do not always produce healing, they are so satisfactory in a large number of cases that they have therapeutic value.

Archives of Ophthalmology, Chicago

32:353-442 (Nov.) 1944

- Penicillin Therapy in Ophthalmology. J. H. Dunnington and I. E. Sallmann.—p. 353.
Use of Absorbable Sutures in Cataract Surgery. W. L. Hughes, L. P. Guy and H. H. Romaine.—p. 362.
Amblyopia Resulting from Hemorrhage. R. A. Cox.—p. 368.
Paresis of Right Superior Oblique and of Left Superior Rectus Muscles: Differential Diagnosis. W. T. Davis.—p. 372.
Effect of Chemical Warfare Agents on Human Eye. S. S. Scherf and R. R. Blondis.—p. 381.
Relation of Blood Dyscrasia to Retinopathy. S. A. Agatston.—p. 385.
Toxicology of Dichloroethane: I. Effect on the Cornea. L. A. Heford, P. A. Neal, K. M. Eudicott and V. T. Porterfield.—p. 391.
Johannes Müller: Sketch of His Life and Ophthalmologic Work. B. Chance.—p. 395.
*Spontaneous Retinal Reattachment. A. Knapp.—p. 403.
Removal of the Ruptured Capsule in Operations for Cataract. F. H. Verhoeff.—p. 407.
Mitotic and Wound Healing Activities of the Corneal Epithelium. J. S. Friedenwald and W. Buschke.—p. 410.
Cordite as an Intraocular Foreign Body. A. C. Unsworth.—p. 414.
Complicated Cataract Associated with Spontaneous Detachment of the Retina. B. Samuels.—p. 416.

Spontaneous Retinal Reattachment.—According to Knapp the course of serous retinal detachment is sometimes curiously modified when the detachment of the retina remains stationary and there is reattachment, which gives rise to a characteristic ophthalmoscopic picture. This condition is observed in a small percentage of cases and only when the detachment occupies the lower half of the eyeground. The detachment is shallow, and its upper boundary is bound down by chorioretinal changes, which constitute the most striking sign. The retina in the course of time becomes reattached except for small areas in the extreme periphery, where there are one or more holes or an area of dialysis. The reattached, flat retina is generally changed to a paler, yellow gray; there are characteristic branching white subretinal lines and areas where the choroidal markings are more distinct and irregular retinal pigmentation is present. The author describes 18 cases in which reattachment of the retina had taken place. The field defect cannot be restored by late operation in cases of retinal reattachment; it remains stationary and permanent. Central vision depends on involvement of the macula. The only object of an operation in a case of late detachment is to preserve the macular area if it is not firmly shut off, and the feasibility of this operation depends on the extent and the age of the macular change. Notwithstanding

the prospect of self limitation of a retinal detachment which is limited to the lower half of the fundus, an early operation should be performed to avoid involvement of the macula and to preserve the visual field.

Arizona Medicine, Phoenix

1:297-360 (Nov.) 1944

Medical Indications for Splenectomy. G. Carpenter.—p. 317.

Tumors of Nasopharynx. F. B. Yount.—p. 321.

*Rabies. H. L. Martin.—p. 323.

The Arizona Occupational Disease Disability Law. R. Gilbert.—p. 326.

Rabies.—The efficiency of antirabies vaccine for dogs is debatable. Most authorities believe that from 65 to 80 per cent of dogs will be protected by its use. Martin states that in Arizona the incidence of rabies in animals is unusually high. Every dog which bites any one should be isolated for a period of not less than ten to fourteen days. If he is still healthy and active at the end of fourteen days the likelihood of that animal having been infectious at the time of attack is very remote. If the dog dies within that time, the head of the animal should be sent to a competent laboratory for the examination of the brain substance to determine whether or not Negri bodies are present in the nerve cells, particularly in Ammon's horn. The animal should not be shot unless it is impossible to catch it. Treatment of the bitten person with antirabies vaccine is not without danger, but the danger of complications becomes less as the vaccine becomes more refined. All wounds caused by the animal should be thoroughly cleansed with soap and water and then cauterized. If the wound is in the shoulder, neck or forearm, treatment with vaccine should be started at once. If the area of injury is on the extremities or elsewhere, it is considered safe to wait until the dog has been observed. If the animal cannot be found and a definite break in the skin has been made, treatment is advisable. If the patient has had only casual contact with the dog, which later proves to be rabid, but with no direct injury, it is advisable to give treatment to the contact if less than 12 years of age.

Bulletin New York Academy of Medicine, New York

20:601-650 (Dec.) 1944

Thrombophlebitis—Medical Treatment. A. W. Duryee.—p. 604.

Surgical Treatment of Thromboembolism and Its Sequelae. G. de Takats.—p. 623.

Bull. of the U. S. Army Med. Dept., Washington, D. C.

No. 83, 1-122 (Dec.) 1944. Partial Index

*Cerebral Form of Malaria. T. Fitz-Hugh Jr., D. S. Pepper and H. U. Hopkins.—p. 39.

Sympathetic Ophthalmia. M. E. Randolph.—p. 49.

Trench Foot. J. C. Edwards, M. A. Shapiro and J. B. Ruffin.—p. 58.

Complications of Primary Atypical Pneumonia. C. S. Higley, H. A. Warren and R. S. Harrison.—p. 67.

Footdrop Following Skeletal Fixation. E. Blumenfeld.—p. 73.

Infectious Mononucleosis. W. H. Walker.—p. 80.

Field Water Supplies in Tunisia. A. F. Sellers and G. H. Gowen.—p. 94.

Neuropsychiatric Outpatient Department. N. Gioseia and J. J. Michaels.—p. 100.

Injury to Cerebral Cortex Following Anoxemia and Exsanguination: Case. R. E. Church and L. H. Locser.—p. 104.

Pack Palsy. B. Woodhall.—p. 112.

Isolated Outbreaks of Streptococcal Sore Throat. O. S. Ogden.—p. 118.

Cerebral Form of Malaria.—Fitz-Hugh and his associates report statistical data on 140 cases of cerebral malaria encountered during the six months that ended in October 1943. These cases constitute 2.3 per cent of the total series of 6,059 cases of malaria. Among the 1,764 American patients with malaria there occurred only 2 deaths, whereas among the 4,295 patients of an allied nation 38 deaths occurred. Both deaths in the American group occurred in patients with *Plasmodium falciparum* infections, and 32 of the 38 deaths in the other group occurred also in patients with this infection. Cerebral malaria is chiefly a result of *P. falciparum* infection. *Falciparum* (estivoautumnal, malignant tertian) malaria is truly a protean disease. Within the category of cerebral malaria there are many and varying manifestations. The cerebral phenomena resulting from plugging of the capillaries by plasmodia, pigment laden leukocytes and erythrocytes vary from minimal to the most violent. Cortical irritation, subcortical, brain stem, basal ganglions, frontal lobe, parietal lobe, cerebellar and hypophyseal

syndromes may be observed, with or without the phenomena of generalized cerebral edema. Photophobia and vertigo were frequent complaints. A moderate number of patients developed sudden severe cerebral symptoms one to three days after admission with, and routine treatment of, what appeared to be ordinary malaria. The neurologic phenomena are variable and may change with remarkable rapidity. Some patients are alternately rigid and flaccid. Not uncommonly there is a moderately stiff neck without a Kernig or Babinski sign and with absent knee jerks. Contrariwise there may be transiently positive Kernig and Babinski signs, exaggerated knee jerks and abortive clonus, with or without stiff neck. The management of cerebral malaria calls for a "high index of suspicion" and prompt coordinated action on the part of ward officers, nurses and ward masters. These patients constitute true medical emergencies. Day and night vigilance and prompt measures to meet the shifting requirements are essential. Some of the early, merely somnolent patients can be cajoled and "stimulated" into sufficient cooperation to make oral quinine therapy and oral fluid administration possible. The nasal catheter route of administration of quinine, atabrine, fluids, salt and sugar is useful in many cases. The greater was the authors' experience with intravenous administration of quinine dihydrochloride, the less became their fear of this procedure. Transfusion of blood or plasma brought a number of patients out of coma, caused the disappearance of pulmonary edema and seemed to make the difference between life and death. A considerable number of patients have awakened from coma following spinal fluid drainage. An initial tap is always justifiable in comatose patients or those with stiff neck. The intravenous administration of epinephrine proved of value to certain comatose patients. The authors have learned to rely on total doses of 3 to 4 Gm. of quinine each twenty-four hours in cerebral or severe *falciparum* malaria. This should be maintained for two or three days and then reduced to about 2 Gm. daily until the patient is out of danger of relapse. A few cerebral cases in group B have been treated and cured solely with atabrine. For the maniacal or convulsive patient intravenous sodium amylal is most useful.

Canadian Journal of Public Health, Toronto

35:419-460 (Nov.) 1944

Public Health and Medical Practitioner. B. T. McGhie.—p. 419.

Thoughts on Tuberculosis Control in Canada. W. H. Hatfield.—p. 423.

*Outbreak of Typhoid Fever in Alberta Traceable to Infected Cheddar Cheese. D. B. Menzies.—p. 431.

Canadian Vital Statistics During War Years. E. Charles.—p. 439.

Typhoid in Alberta from Cheddar Cheese.—Menzies reports that in the 1944 outbreak in Alberta 83 cases of typhoid were reported, with 7 deaths. Questioning revealed that all the sick persons had eaten fresh, green cheddar cheese. The suspected cheese was withdrawn from the market and an investigation was started among the people supplying milk to the cheese factory in which the cheese had been prepared. It was learned that milk was being shipped by 96 different families, 223 members of which gave histories of handling milk in one way or another. Of these 223 persons 19 gave histories of previously having had typhoid, 51 gave histories of contact with typhoid and 82 gave histories of remote contact. The remaining 81, many of whom were adolescents born in the district, gave histories which more or less ruled out their being the agent responsible for the outbreak. Three samples of stool (on different days) and one urine sample were obtained from each member of the two groups first mentioned. Single samples of stool and urine were obtained from the third group. No testing was done on the remaining 81 persons. As a result of this procedure 1 carrier was detected among the first group giving a history of having previously had typhoid. This woman, aged 38, had had the disease in Russia in 1919. All 3 of her stool samples were positive. All other samples obtained from the other 141 persons proved negative. The typhoid organism was not isolated from the cheese. The cheese tested was 48 and 63 days old. In view of the work of Campbell and Gibbard on the survival of *Eberthella typhosa* in cheese it was hoped that the actual organism would be isolated, but such was not the case. Why the typhoid organism should survive for as long as 336 days in artificially inoculated cheese and be absent in ordinary infected cheese 63 days old is an open question.

Statistical records indicate that the period of incubation of the disease was from fourteen to twenty-one days. There was evidence to show that the typhoid organism was still alive for approximately one month after the date of manufacture but nothing to indicate that any cases were contracted by eating infected cheese of greater age. Phage typing afforded an additional means of assuring that the organism isolated from the carrier, viz. type E, was the same type as that found in 6 of the cases chosen at random. The problem was such in the opinion of the Provincial Board of Health that legislation was necessary to prevent further outbreaks. As a result of this decision, regulations respecting the sale of cheese in the province of Alberta were to go into effect on Dec. 1, 1944. These regulations require that cheese either be pasteurized or be stored for at least three months following manufacture before being allowed to appear on the open market.

Hawaii Medical Journal, Honolulu

4:1-56 (Sept.-Oct.) 1944

- Tropical Disease Dangers in Hawaii. N. P. Larsen, C. T. Young and A. M. Masters—p. 9
Mimicry by Leprosy. E. K. Chung Hoon—p. 13
Proctoscopic Color Movies. J. P. Nesselroed—p. 15

Indiana State Medical Assn. Journal, Indianapolis

37:579-670 (Nov.) 1944

- Medical Aspects of Pressurized Aircraft. D. N. W. Grant—p. 579
Primary Atypical Pneumonia. R. W. Bernhard and D. W. Chapman—p. 584
Principles in Diagnosis and Treatment of Peripheral Vascular Disease. I. N. Katz—p. 589

37:671-758 (Dec.) 1944

- Tumors of Bronchi. P. H. Holinger—p. 671
Fibrocystic Disease of Pancreas with Unusual Associated Lesion. I. J. Markel—p. 674
Gonorrheal Ophthalmia. Report of Case Treated with Penicillin. M. E. Miller—p. 679
Surgery of Trauma and Its Importance as Emergency. L. K. Cooper—p. 681
Alcoholics Anonymous for Treatment of Chronic Alcoholism. G. E. Metcalfe—p. 684

Journal of Clin. Endocrinology, Springfield, Ill.

4:469-510 (Oct.) 1944

- *Modified Protamine Zinc Insulin: Comparison with Globin Zinc Insulin and Insulin Mixtures. C. M. MacBryde and R. S. Reiss—p. 469
Case of Cushing's Syndrome Treated with Testosterone Propionate. M. J. Whitelaw—p. 480
Parathyropituitary Syndrome in Pituitary Eosinophilism. R. M. Perlman—p. 483
Cranuloma of Pituitary Associated with Pan Hypopituitarism. S. J. Glass and S. Davis—p. 489
Parathyroid Insufficiency and Human Electroencephalogram. J. B. Odoriz, E. B. Del Castillo, J. F. Manfredi and F. A. De La Balze—p. 493
Antihormonal Problem in Clinical Endocrine Therapy. J. H. Leatham—p. 500
Luncheon Habitus Associated with Sickle Cell Anemia and Sickness. E. A. Sharp and E. C. Vonder Heide—p. 505

Comparison of Insulins.—Of 350 well controlled diabetic patients treated by MacBryde and Reiss in four years only 186 could be regulated with protamine zinc insulin alone, while 164 required in addition a separate morning injection of regular insulin. The authors show that if the majority of moderate and severe cases of diabetes are to be controlled with one daily injection, some different modification of insulin will prove necessary. The authors investigated several insulin modifications. They give particular attention to a standard modified protamine zinc insulin having the same pH as market protamine zinc insulin (7.2) but containing only half the added protamine and zinc. Approximately 75 per cent of this insulin is in precipitated, slowly absorbed form, while 25 per cent is in solution and is rapidly absorbed. In 16 comparative case studies, modified protamine zinc insulin gave better control in 13 patients than globin zinc insulin. In no case did globin zinc insulin establish better regulation than modified protamine zinc insulin. Globin zinc insulin failed to prevent after-breakfast hyperglycemia in 12 of the 16 cases and caused afternoon hypoglycemia in 9 of the 16. Fasting blood sugars were higher in 13 of the 16 cases when globin zinc insulin was used. Even when special diets were employed, allowing a smaller breakfast

and a larger lunch, the same defects in control were observed with globin zinc insulin. In ten direct comparative studies with an extemporaneous mixture made with 2 parts of crystalline insulin and 1 part of protamine zinc insulin, modified protamine zinc insulin gave better control in every one of the 10 cases. Irregular results were obtained with the mixture, with failure to duplicate twenty-four hour curves. The rise in blood sugar after breakfast was poorly controlled with the mixture and there was a tendency to hypoglycemia at midafternoon or in the night. In a total of 110 case studies conducted over a 10 year period, good regulation was established in 98 patients; a single injection of modified protamine zinc insulin daily. Severe as well as mild cases were well controlled. The authors think that the use of multiple forms of insulin should be discouraged. They think that two forms of insulin should be sufficient. (a) modified protamine zinc insulin such as that used in these studies, which might well be substituted for standard protamine zinc insulin since it will control a much larger percentage of patients with uncomplicated diabetes, and (b) regular (or crystalline) insulin for use in diabetic emergencies and whenever supplementary insulin is required.

Journal of Clinical Investigation, Boston

23:859-964 (Nov.) 1944

- *Chemical Studies in Hypertension: Reducing and Nitrogenous Fractions in Protein Free Blood Filtrates. R. F. Holden—p. 859
Variations in Behavior of Buffy Coat Cultures Among Individuals of Different Constitution Types. G. Draper, Helen J. Ramsey and C. W. Dupertuis—p. 864
Serum Albumin Regeneration as Effected by Intravenously and Orally Administered Protein Hydrolysates. W. M. Cox Jr. and A. J. Mellor—p. 875
*Effect of Testosterone Compounds on Nitrogen Balance and Creatinine Excretion in Patients with Thyrotoxicosis. L. W. Kinsell, S. H. W. and E. C. Reifenstein—p. 880
Autohemagglutination: "Cold Agglutinins." C. B. Favour—p. 891
Studies of Accommodation of Nerve in Parathyroid Deficiency. R. W. Wighton and F. Brink Jr.—p. 898
Determination of Arterial Oxygen Saturations from Samples of "Capillary" Blood. J. L. Lilienthal Jr. and R. L. Riley—p. 904
New Method for Studying Breathing, with Observations on Normal and Abnormal Subjects. L. Silverman, R. C. Lee and C. K. Drinker—p. 907
*Renal Excretion of Sulfamerazine. D. P. Earle Jr.—p. 914

Chemical Studies in Hypertension.—Holden describes the determination of nonfermentable reducing substance and non-urea nitrogen in protein free blood filtrates from hypertensive subjects. The patients are classified into two groups, one with normal, the other with elevated blood nonprotein nitrogen level in an effort to demonstrate corresponding variations in the fractions under consideration. Appreciable amounts of nonfermentable reducing substance were noted in 30 of 38 zinc filtrates from patients with hypertensive disease and in 4 of 21 control filtrate. A similar difference was found in tungstic acid filtrates. Among the hypertensive subjects the nonfermentable reducing substance in zinc filtrates exhibited some tendency to vary with non-urea nitrogen. No direct relation to blood pressure or urea clearance could be demonstrated.

Testosterone Compounds in Thyrotoxicosis.—Thyrotoxicosis is characterized by an increase in the urinary excretion of nitrogen and creatine and by a decrease in body weight. Testosterone propionate has the opposite effect of these three variables. Kinsell and his co-workers investigated the metabolic effect of testosterone propionate and methyl testosterone on 3 patients with thyrotoxicosis. Testosterone propionate induced a positive nitrogen balance in these patients and caused a weight gain; these effects were obtained in patients whose diet was constant and even in individuals whose caloric intake was less than their caloric expenditure. Methyl testosterone had a similar initial effect on the nitrogen balance, but its effect was not sustained. The difference between methyl testosterone and testosterone propionate may possibly be attributed to its calorogenic effect of the former or, more probably, to its different effect on creatine metabolism. Testosterone propionate decreased the hypercreatinuria which characterizes thyrotoxicosis; methyl testosterone increased it. It is suggested that methyl testosterone may increase creatine formation at the expense of protein anabolism. In the 1 patient with thyrotoxicosis in whom calcium studies were carried out, there was with testosterone propionate therapy a striking reduction in

the hypercalciuria characteristic of thyrotoxicosis. The effect of testosterone propionate in reducing the serum potassium level was confirmed in 1 patient. Testosterone propionate improved the clinical status of thyrotoxic patients, methyl testosterone, on the contrary, aggravated their toxicity. The latter drug is probably contraindicated in this disease. Testosterone propionate may prove to be a useful therapeutic adjunct in preparing for operation thyrotoxic patients who have sustained severe weight loss, with emaciation and muscle wasting. A daily dosage of 12.5 mg. is probably adequate. This should be given in addition to whatever drug is used to reduce the metabolic rate—iodine or thiouracil.

Renal Excretion of Sulfamerazine.—Earle made simultaneous measurement of the renal plasma clearance of the drug and the rate of glomerular filtration under different experimental conditions. Measurements also were made on the extent to which sulfamerazine is bound to the nondiffusible constituents of plasma, presumably plasma albumin, since it is only the unbound drug in the plasma water that is presented to the glomeruli for filtration. The ratio of the unbound drug clearance to the concurrent rate of glomerular filtration (excretion ratio) yields information on the extent to which the filtered material is reabsorbed or excreted by the renal tubules. The addition of a methyl group to the pyrimidine ring of sulfadiazine to form sulfamerazine results in a compound that has a very low overall renal excretion rate. This is the result of extensive reabsorption by the renal tubules and binding on plasma proteins. The N^4 -acetyl derivative of sulfamerazine (which is presumably its conjugated form) is secreted rather than reabsorbed by the renal tubules. The low overall excretion rate of sulfamerazine has two distinct therapeutic advantages: (1) relatively infrequent and small doses are required to maintain any given plasma concentration, and (2) the urine concentration of the drug at any given plasma level is less than that of other sulfonamides in current use. Such a circumstance should minimize the renal hazard of sulfonamide therapy, but additional factors such as solubility, urine flow and pH may be expected to operate in this respect. An increase in the excretion rate of sulfamerazine accompanies augmented electrolyte elimination. This occurs when the electrolyte excretion is increased by a variety of means. The renal excretion of sulfamerazine does not appear to be simply related to the rate of urine formation. Indirect evidence suggests that sulfamerazine is reabsorbed by an active transport system in the renal tubules, but this has not been directly demonstrated.

Journal of Experimental Medicine, New York

80:455-586 (Dec.) 1944

- Plasma Protein Metabolism—Normal and Associated with Shock. Observations Using Protein Labeled by Heavy Nitrogen in Lysine. R. M. Fink, T. Enns, C. P. Kimball, H. E. Silberstein, W. F. Bale, S. C. Madden and G. H. Whipple—p. 455
- Adjuvants in Immunization with Influenza Virus Vaccines. W. F. Friedewald—p. 477
- Spirochetal Action of Penicillin in Vitro and Its Temperature Coefficient. H. Eagle and Arlyne D. Musselman—p. 493
- Influence of pH and of Certain Other Conditions on Stability of Infectivity and Red Cell Agglutinating Activity of Influenza Virus. G. L. Miller—p. 507
- Sedimentation Rate of Biologic Activities of Influenza A Virus. M. A. Lauffer and G. Miller—p. 521
- Biophysical Properties of Preparations of PR8 Influenza Virus. M. A. Lauffer and W. M. Stanley—p. 531
- Electrophoretic Studies on PR8 Influenza Virus. G. L. Miller, M. A. Lauffer and W. M. Stanley—p. 549
- Effect of Enzyme Inhibitors and Activators on the Multiplication of Typhus Rickettsiae. J. Penicillin, Para-Aminobenzoic Acid, Sodium Fluoride and Vitamins of B Group. D. Greiff, H. Finkler and V. Moragues—p. 561.

Kansas Medical Society Journal, Topeka

45:377-412 (Nov.) 1944

- Thiouracil in Treatment of Hyperthyroidism. R. E. Bolinger—p. 377.
- Uncommon Paralysis of Extraocular Muscles. B. J. Ashley—p. 380
- Solitary Calcified Cyst of Spleen. H. W. Neidhardt—p. 382

45:413-448 (Dec.) 1944

- Kansas Evaluation Studies of Performance of Serologic Tests for Syphilis. C. A. Hunter and F. Victor—p. 413
- Penicillin in Gas Gangrene. A. A. McAuley and A. P. Gearhart—p. 416
- Duplicated Pelvic Viscerorenal Complexes. O. W. Davidson—p. 419

Maine Medical Association Journal, Portland

35:223-248 (Dec.) 1944

- Health Hazards of Welding Fumes. W. E. Fleischer, K. W. Nelson and P. Drinker—p. 223
- A Trustee Looks to the Future. R. P. Sloan—p. 230

Medical Annals of District of Columbia, Washington

13:439-486 (Dec.) 1944

- Medical Care for Veterans and Civilians. J. P. Peters—p. 439.
- Medicine Will Continue to Progress. J. H. Fitzgibbon—p. 443.
- A Challenge to Doctors. R. T. McIntire—p. 449
- Medicine in Industry. H. Bartle—p. 450
- Experiments in Medical Care. N. M. Scott—p. 453.

Medicine, Baltimore

23:281-455 (Dec.) 1944

- Malignant Interstitial Emphysema of Lungs and Mediastinum as Important Occult Complication in Many Respiratory Diseases and Other Conditions: Interpretation of Clinical Literature in Light of Laboratory Experiment. Madge Thurlow Macklin and C. C. Macklin—p. 281.

- *Biologic False Positive Serologic Tests for Syphilis. B. D. Davis—p. 359
- Old, Intermediate and Contemporary Contributions to Knowledge of Pandemic Influenza. R. E. Shope—p. 415

False Positive Serologic Tests for Syphilis.—A positive test is a candidate for induction into the armed forces of the United States may be the basis for rejection. The findings of the Committee on Medical Research of the Office of Scientific Research and Development are discussed by Davis. The incidence of transient positive tests following acute infections depends largely on the frequency of testing during the acute and convalescent stages. Although postinfectious or postvaccinial positive reactions occasionally last as long as three months, most become negative within a few days or weeks. Since it is customary to perform serologic tests on hospital patients only on admission, at which time acute infections have not fully developed their antibodies, it is likely that the ability of many common infections to lead to false positive serologic tests is grossly underestimated. False positive serologic tests are common (more than 10 per cent of cases) in leprosy, malaria in the acute stages, infectious mononucleosis, vaccination against smallpox, rat bite fever due to *Spirillum minus*, relapsing fever, lupus erythematosus and possibly certain types of atypical pneumonia. There is no reliable evidence that the serologic tests are significantly affected by pregnancy, menstruation, scarlet fever, jaundice (other than infectious), subacute bacterial endocarditis, tuberculosis or hypoproteinemia. Inadequate data are available on measles, mumps, infectious hepatitis, lymphopathia venereum, chancroid and many other diseases. Transient false positive reactions may occur in apparently normal persons without recent illness. Even persistently positive reactions may occur in nonsyphilitic patients. Since a large proportion of seropositive patients have no syphilitic lesions at necropsy, it is entirely possible that many seropositive persons without a history or signs of the disease have been mistakenly diagnosed and treated for latent syphilis. In large serologic dragnets the number of innocent victims may be large, and the psychologic, social and legal consequences to the individual may be serious. A positive serologic test is not an emergency. The most important procedure, in the absence of pregnancy, is a probationary period of at least three months before starting treatment. While many false positive tests will be revealed as transient during this period, there is no verification test available today to help in the diagnosis of those which remain positive.

New England Journal of Medicine, Boston

231:721-752 (Nov. 30) 1944

- Justice and Future of Medicine. W. Berge—p. 721
- Urologist Looks at Changing Trends in Medical Practice. H. L. Kretschmer—p. 729
- Cardiology. Normal Heart in Old Age. A. S. Freedberg and H. D. Lewis—p. 731.

231:753-780 (Dec. 7) 1944

- Study of Patient from Psychosomatic Standpoint. K. J. Tillotson—p. 753
- Pilonidal Cyst: Analysis of 132 Consecutive Cases. H. H. Hamilton, B. S. Custer and A. Kellner—p. 757
- Use of Gauze Inoculated with Penicillium Notatum or Impregnated with Crude Penicillin in Treatment of Surface Infections. R. S. Myers, R. H. Aldrich, R. W. Howard and R. A. Walsh—p. 761
- Endocrine Aspects of Cancer. I. T. Nathanson—p. 764

New Jersey Medical Society Journal, Trenton

41:427-466 (Dec.) 1944

- Medical Treatment of Gallbladder Disease. M. E. Rehfuss.—p. 431.
New Payment Plan for Care of Indigent Sick. C. V. Craster.—p. 437.
Hemorrhagic Chickenpox—Case Report. R. A. Ford and R. B. Marin.—p. 440.
Home Nursing—Help for the Busy Doctor. H. E. Kleinschmidt.—p. 442.

New Orleans Medical and Surgical Journal

97:243-290 (Dec.) 1944

- Prostatic Obstruction and Some of Its Common Complications. E. Burns.—p. 243.
Pelvic Inflammatory Diseases. W. L. Bendel.—p. 248.
General Considerations of Brucellosis. H. J. Schmidt.—p. 256.
Peptic Ulcer: Psychosomatic and Medical Aspects. R. A. Katz.—p. 262.
Ruptured Intervertebral Disks. J. D. Lane.—p. 270.
Orbital Cellulitis with Severe Cerebral Symptoms (Possible Cavernous Sinus Thrombosis): Successful Treatment with Combined Sulfanilamide-Penicillin Therapy. J. Ramagosa and G. D. Rackley.—p. 276.
Yearly Report of Cancer Clinic at Charity Hospital. A. Ochsner and M. F. Kepl.—p. 277.

New York State Journal of Medicine, New York

44:2527-2638 (Dec. 1) 1944

- Rapid Plan for Treatment of Early Syphilis for Office Practice. A. B. Cannon, J. K. Fisher and L. Wexler.—p. 2571.
Intensive Treatment of Early Syphilis—Method of Eagle and Hogan. G. M. MacKee and G. D. Astrachan.—p. 2577.
Serologic Aspects of Early Syphilis. R. C. Arnold and Margaret R. Zvally.—p. 2584.
Evaluation of Newer Drugs in Ophthalmology. W. S. Atkinson.—p. 2590.
Management of Obesity. L. Perner.—p. 2596.
Role of Developmental Diagnosis in Clinical Medicine. A. Gesell.—p. 2599.
Nutritional Improvement of Child Mentality: I. N. Kugelmann, Louise E. Poull and Emma L. Samuel.—p. 2604.

Oklahoma State Medical Assn. Jour., Oklahoma City

37:481-526 (Nov.) 1944

- Observations in "Thymus-Disease." G. R. Russell.—p. 481.
Urologic Pain with Negative Urinalysis. W. F. Lewis.—p. 484.
Science of Radiology. W. S. Larrabee.—p. 486.
Diagnosis and Medical Management of Poliomyelitis. C. M. Pounders.—p. 487.
Treatment of Neuroses in General Practice. H. M. Galbraith.—p. 489.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

20:1-120 (Sept.) 1944

- Control of Yellow Fever. M. W. Hargett.—p. 3.
Present Knowledge of World Problem of Yellow Fever, with Special Reference to South America and, More Particularly, to Brazil. H. P. Froes.—p. 46.
Relationship of Clinical Amebiasis to Various Strains and Growth Requirements of *E. histolytica*. H. E. Meleney.—p. 59.
Mycetoma by *Monosporium Apiospermum* in St. Croix, Virgin Islands. A. L. Carrión and J. Knott.—p. 84.
New Neotropical Biting Sandflies of Genus *Culicoides* (Diptera: Ceratopogonidae). I. Fox and W. A. Hoffman.—p. 108.

Rocky Mountain Medical Journal, Denver

41:873-884 (Dec.) 1944

- Modern Treatment of Anterior Poliomyelitis. O. L. Huddleston.—p. 889.
Dehydrating Our Medical Reading. C. B. Van Zant.—p. 904.
Role of Roentgenogram in Tuberculosis Finding. A. Rest.—p. 906.
*Rocky Mountain Spotted Fever: Treatment with Penicillin. P. K. Edmunds.—p. 910.

Penicillin in Rocky Mountain Spotted Fever.—Edmunds reports that a boy aged 14, who became ill with high fever, chills, headache, backache, vomiting and general malaise, was admitted to the hospital and was given sulfonamides as a matter of routine. These proved ineffective. A diagnosis of Rocky Mountain spotted fever was made and was corroborated by a history of tick bites and an increased agglutination dilution for Rocky Mountain spotted fever. One hundred thousand units of penicillin was added to 500 cc. of isotonic solution of sodium chloride and given by drip intravenously. Within two hours the temperature, which had been between 104 and 105 F., dropped to 100 F. and there was a definite improvement in the patient's condition. The boy recovered. The author hesitates to draw conclusions from 1 case, but he hopes that penicillin will be tried by others in Rocky Mountain spotted fever so that its benefits will be either proved or disproved.

South Carolina Medical Assn. Journal, Florence

40:221-248 (Nov.) 1944

- Practical Obstetrics. J. D. Guess.—p. 221.
Use of Continuous Spinal Anesthesia for Analgesia in Labor and During Delivery. P. G. Ebner.—p. 224.
Instrument for Obtaining Split Skin Grafts. L. H. McCalla.—p. 228.
Tick Paralysis Resulting from Infestation with *Dermacentor Andersoni* of Stiles, Common Rocky Mountain Wood Tick. C. P. Ryan and H. B. Canning.—p. 229.

40:249-274 (Dec.) 1944

- Treatment of Diabetic Coma. O. Z. Culler.—p. 249.
*Aneurysm of Abdominal Aorta: Analysis of 17 Cases. H. R. Pratt Thomas.—p. 251.
Results with Commercial Smallpox Vaccine. J. I. Waring.—p. 254.
Treatment of Vincent's Angina of Tonsil. N. O. Eaddy and M. Abramson.—p. 255.
Congenital Hydronephrosis: Case Report. A. C. Hope.—p. 256.

Aneurysm of Abdominal Aorta.—Pratt-Thomas states that aneurysm of the abdominal aorta among Negroes is not rare. Aneurysms of the thoracic portion of the aorta are from seven to ten times more frequent than those of the abdominal aorta, but the comparative incidence of the two conditions shows considerable variation in different localities. In the necropsies performed in the department of pathology of the Medical College of South Carolina since 1917 there have been 89 aneurysms of the aorta. Sixteen of these were of the dissecting variety. Of the remaining 73 of saccular or fusiform type 56 were located in the thoracic and 17 in the abdominal aorta. Fourteen of these 17 were in men. The higher incidence of syphilis among men, as well as the possible effects of greater physical effort, are believed responsible for this unequal sex ratio. The higher incidence of syphilis among the colored race also probably accounts for the fact that 14 of these patients were Negroes. Syphilis was the etiologic factor in 15 of the 17 patients. The principal symptom of abdominal aortic aneurysm is pain. Fifteen of the patients in this series complained of pain. This was described as dull and aching by some, but in 7 it was variously described as cutting, sharp, dagger-like or incapacitating. It may be located in any portion of the abdomen or back but is most frequently present in the lower thoracic and lumbar regions. Seven patients complained of pain in the back. Just as pain is the most important symptom, so a tumor mass is the sign of greatest significance. Rupture of the aneurysm was the cause of death of 11 patients. Complications occurring as a direct result of the unruptured aneurysm were responsible for the death of 3 patients. These were compression atelectasis, thrombophlebitis of the leg, acute cystitis, infarction of the kidney with uremia and bronchopneumonia. In 3 cases the aneurysm was an incidental finding, the causes of death being gummata of the heart with aneurysm of the interventricular septum, acute hemorrhagic pancreatitis and hypertensive cardiovascular disease with lobar pneumonia. The average length of life after the onset of symptoms in 14 cases was six months.

United States Naval Med. Bulletin, Washington, D. C.

43:847-1084 (Nov.) 1944. Partial Index

- *Liver Involvement in Malaria. R. A. Kern and R. F. Norris.—p. 847.
*Relapsing Malaria: Analysis of Cases from Solomons. R. J. Metcalf and J. Ungar Jr.—p. 859.
*Air Embolism in Immersion Blast. F. J. Gouze and R. Hayter.—p. 871.
Adherent Scars of Lower Extremity. G. V. Webster.—p. 878.
Medical Problems in Amphibious Warfare: LST in Evacuation of Casualties. T. D. Cuttle and J. N. Marquis.—p. 922.
Hospital Ship in Amphibious Action. F. F. Wildbush and J. E. Clirer.—p. 937.
Pathogenic Enteric Bacilli: II. *Salmonella* Group. L. A. Barnes.—p. 939.
*Filariasis: Clinical Findings in 189 Cases. P. A. G. Johnson.—p. 957.
Filarial Problem on Nanumea. R. B. Venner.—p. 955.
Eyeglasses for Combat. A. A. Knapp.—p. 964.
*Penicillin in Treatment of Primary Atypical Pneumonia: 9 Cases. J. J. Short.—p. 974.
Penicillin Therapy in Phagedenic Ulcer (Tropical Sloughing Phagedena): Report of 18 Cases. W. G. Hamm and G. Quary.—p. 981.
Chemotherapy, Pyrotherapy and Penicillin in Treatment of Gonorrhea. D. H. Pardoll and R. L. Dennis.—p. 988.
Penicillin in Treatment of Rheumatic Fever and Gonococcal Infection. J. R. Twiss.—p. 1001.

Liver Involvement in Malaria.—Kern and Norris were impressed with the frequency of involvement of the liver in their studies of 1,153 cases of malaria seen on a hospital ship. Enlargement of the liver was found 59 times in 100 consecutive

proved malarial patients. Two thirds of the patients with falciparum infection had an enlarged liver. This was a somewhat higher incidence than among the vivax cases or among those in whose thick films plasmodia were found, but the species of plasmodium could not be identified. The enlargement of the liver, like that of the spleen, seemed to follow the course of the disease. It was not palpable at the onset of the disease but enlarged during the first few days of fever and tended to remain so during the duration of symptoms. It grew smaller as the fever subsided under treatment. The consistency of the enlarged liver varied considerably. Liver tenderness was present on palpation in 8 of the 59 patients. The liver involvement is attended by impaired hepatic function, as shown by increased van den Bergh readings of blood bilirubin, but rarely reaching the stage of obvious jaundice and by sulfobromophthalein retention. Impairment of function, like enlargement of that organ, varies with the activity of the disease. The liver condition may give rise to anorexia, occasionally to nausea and vomiting, and perhaps to other vague symptoms that might be called "cachectic." The enlarged liver is at times tender to palpation and in rare instances is painful, suggesting the possibility of liver abscess. The presence of liver involvement is not an evidence of chronicity. The nature of the liver change is uncertain; at most it may be a swelling of the parenchymal cells and attendant compression of the sinusoids, plus the finding of malarial pigment in the Kupffer cells. The authors recommend the use of a high carbohydrate, high protein, low fat diet in malaria to spare the liver from further damage.

Relapsing Malaria.—Metcalf and Ungar analyze observations on a series of 250 cases of malaria, all except 2 of which were in men who had been evacuated to this country following the initial engagement in the Solomon Islands. On return to the continental limits all patients were admitted to a naval hospital, where malarial smears were made. In the absence of clinical malaria and with negative smears many patients after a relatively short time were granted thirty to forty days' sick leave and permitted to go to their homes. Many became acutely ill while on leave and were forced to seek treatment at or near their homes. These relapses did not seem to respect any particular climate or altitude. The cases described here are chronic relapses, benign tertian in type. A low parasitemia was capable of producing a severe rigor. The figure has been as low as 9 parasites per cubic millimeter of blood. This is in contrast to the findings in natives inhabiting malarious areas, who frequently are shown to harbor a tremendous number of parasites with no clinical manifestations. Even in the American forces at this comparatively early date many cases with parasitemias but no clinical disease have been reported. These cases are added evidence that we do not have as yet any drug or combination of drugs adequate for coping with the malaria problem. It is fortunate in view of the quinine shortage that atabrine is available. This drug has a meritorious record in malignant tertian malaria. Its efficacy in the benign tertian type is considerably less. Atabrine failure is not due to insufficient dosage, since large doses were given. Quinine in large doses has been much more effective in these cases. The ideal drug for eradicating plasmodia, particularly the latent form recently termed the cryptozoite, may well be found to be a colloidal plasmodicide having a special affinity for the reticuloendothelial system. Such a compound has been evolved by combining high molecular pectin solutions with various soluble plasmodicides. Toxicity studies are promising, but as yet no opportunity for using the substance in experimental malaria has been afforded.

Air Embolism in Immersion Blast.—Gouze and Hayter carried out experiments to determine whether air enters the circulation in blast injury to the lungs and, if it does, what part it plays in the sudden death observed in severe blast injury. One guinea pig and 9 rabbits were used. Postmortem observations on animals subjected to fatal immersion blast revealed frequent air embolism of varying degree. The authors believe that early death in blast is caused by (a) air embolism, (b) reduced respiratory function and (c) insufficient flow of blood from the left ventricle. Data from necropsies on human victims dying soon after blast are needed. It is suggested that victims of blast injury be compressed in an air chamber.

Filariasis.—Johnson analyzes 189 cases of filariasis occurring in Marines, the majority of whom had been examined by the Filariasis Board in the South Pacific and returned to the Marine Corps Base in San Diego. The mean incubation period, the time elapsing between arrival in an infested area and the development of symptoms was nine and a half months. The symptoms observed were fatigue, headache, drowsiness, blurring of vision, dysuria, a chilly sensation at times and backache. There is a wide variation in symptoms. Two conditions consistently observed are swelling of the affected part and tenderness of the involved area, especially during recrudescence. The lymphangitis was usually of a descending type rather than the classic ascending type of lymphatic infection. Lymphadenitis was not always centrifugal, for axillary nodes were sometimes found when epitrochlears were not palpable. In quiescent cases the forearm is often found to be slightly indurated in the upper third. Involved glands in the wrist and in the neck were not uncommon. The legs showed less involvement. Patients with lesions elsewhere complained of pain in the popliteal region and in the thigh on the medial aspect without palpable glandular enlargement. The scrotal lesions presented considerable variation. The testis and epididymis were as a rule but slightly enlarged and somewhat abnormal on palpation. The increased fluid in the tunica could be seen readily during exacerbations. Large inguinal glands were commonly found. During intervals the most consistent indication of having had filariasis was a thickening of the spermatic cord. Even in cases of pronounced swelling there was a moderate degree of pain. Exercise produces an increase in pain and swelling. The effect of climatic variables is uncertain. Damp weather and genuinely hot weather apparently tend to promote relapses. The patients showed a great improvement after being within the United States more than one hundred and seven days. The proper psychologic approach to patients having filariasis greatly reduced their requests for extended hospitalization.

Penicillin in Primary Atypical Pneumonia.—In the first of Short's series of cases of atypical pneumonia the administration of penicillin led to a sudden and sharp temperature decline, disappearance of symptoms and rapid convalescence. Eight additional cases have been treated, all of which responded more or less promptly to the drug. A control series was not observed, but results with penicillin seemed to be much superior to those with the expectant, symptomatic treatment formerly used. The average number of days from the institution of penicillin therapy until the temperature became normal and remained so was 3.5. This is decidedly less than the usual expectancy with supportive treatment.

War Medicine, Chicago

6:283-352 (Nov.) 1944

- Experimental Production of Motion Sickness. E. A. Spiegel, M. J. Oppenheimer, G. C. Henny and H. T. Wycis.—p. 283.
Neuropsychiatry in United States Marine Corps, Women's Reserve: Criteria for Rejection. P. Solomon, M. Brown and M. R. Jones.—p. 291.
Problems and Treatment of Immersion Blast in British Navy. E. P. P. Williams.—p. 296.
Peptic Ulcer in Canadian Army. W. R. Feasby.—p. 300.
Scrub Typhus: Results of Study of Cases of 200 Patients Admitted to and Treated at Station Hospital Between Feb. 9, 1943 and Feb. 4, 1944. B. L. Lipman, A. V. Casey, R. A. Byron and E. C. Evans.—p. 304.
Residuals of War Wounds of Extremities. F. D. Threadgill.—p. 316.
Treatment for Head Lice, Crab Lice and Scabies. G. W. Eddy.—p. 319.
Experimental Impregnation of Underwear with Pyrethrum Extract for Control of Body Lice. H. A. Jones, L. C. McAlister, R. C. Bushland and E. F. Knipling.—p. 323.

Wisconsin Medical Journal, Madison

43:1105-1190 (Nov.) 1944

- Peptic Ulcer: 1. Etiology, Pathology and Incidence of Peptic Ulcer. F. A. Stratton.—p. 1125.
Id.: 2. Medical Treatment of Bleeding Peptic Ulcer. J. Shaiken.—p. 1128.
Id.: 3. Surgical Treatment of Bleeding Peptic Ulcer. R. M. Kurten.—p. 1133.
Id.: 4. Observations on Gastric Carcinoma in Its Earliest Stages. G. B. Eusterman.—p. 1138.
Id.: 5. Operations of Choice in Peptic Ulcer. E. R. Schmidt.—p. 1144.
Id.: Discussion of Symposium. D. C. Balfour.—p. 1147.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:557-610 (Nov. 4) 1944

Infective Hepatitis in Malta Garrison. K. Damodaran and S. J. Hartfall.—p. 587.

Human Milk Intoxication Due to B₁ Avitaminosis. L. Fehily.—p. 590.

Acute Brachial Radiculitis. J. W. A. Turner.—p. 592.

Transnasal Intragastric Ryle's Tube in Tropical Practice. G. A. Ramsome, L. M. Gupta and J. C. S. Paterson.—p. 594.

Suprarenal Hemorrhage: Case. C. J. Williams and R. Ellis.—p. 596.

Human Milk Intoxication Due to B₁ Avitaminosis.—Fehily discusses the high infant mortality in China. Some deaths occur suddenly in apparently healthy, well fed and well cared for babies. Sometimes the mothers observe that their infants suddenly become cyanotic and dyspneic and die, apparently of suffocation. In such cases women believe that suffocation is due to "wind." They believe that this "wind" is transmitted to the infants through their own milk, which is considered to be "no good." Actually the belief that their milk is not good has been scientifically proved. In 1888 Hirota in Tokyo was the first to observe a complex of symptoms in infants fed by beriberi women, and he called this complex infantile beriberi. It is now known that in B₁ avitaminosis, owing to a reduction of certain coenzymes, the intermediary products of incomplete carbohydrate oxidation accumulate in the tissues, organs and body fluids, including human milk. These intermediary metabolites are believed to consist of lactic acid, acetoacetic acid, glycuronic acid, glyceraldehyde, acetaldehyde, dihydroxyacetone, methylglyoxal and others. One of these substances—methylglyoxal—has been shown to be actively toxic and, as it is never found in the milk of healthy women, it has been suggested that this product is the toxic factor in the milk of B₁ avitaminotic women. Various authors have stated that other intermediary products, if in excess, are toxic. The amount of pyruvic acid and sodium pyruvate in the milk of B₁ avitaminotic women seems beyond the infantile tolerance. Human milk intoxication is not restricted to China but occurs whenever the staple foods of women are vitamin B₁ deficient carbohydrates. An apparently healthy mother with latent B₁ avitaminosis may produce milk containing intermediary metabolites just above the infant's tolerance, which would lead to predisposition to infantile complaints such as respiratory infections or persistent intestinal catarrhs. Accumulation of intermediary metabolites in the milk of lactating women may be encountered in conditions other than B₁ avitaminosis, such as acidosis, ketosis, anoxemia, toxemia and uremia.

Journal of Mental Science, London

90:681-834 (July) 1944

Study of Histology of Testis in Schizophrenia and Other Mental Disorders. R. E. Hemphill, M. Reiss and A. L. Taylor.—p. 681.

Significance of Atrophy of Testis in Schizophrenia. R. E. Hemphill.—p. 696.

*Psychometric Method of Determining Intellectual Loss Following Head Injury. W. R. Reynell.—p. 710.

Mental Tests in Senile Dementia. H. Halstead.—p. 720.

Psychiatric States in 130 Ex-Service Patients. H. Stalker.—p. 727.

Resort to Phantasy in Individuals and Societies. G. R. Peherdy.—p. 739.

Foreign Service Neurosis. J. F. Burdon.—p. 746.

Loss of Spatial Orientation, Constructional Apraxia and Gerstmann's Syndrome. E. Stengel.—p. 753.

Acute Confusional Insanity and Delirium. E. S. Stern.—p. 761.

Insulin Treatment in Neurosis. D. E. Sands.—p. 767.

Study of Acute Neurotic Depression as Seen in Military Psychiatry and Its Differential Diagnosis from Depressive Psychoses. G. T. T. Stockings.—p. 777.

Prolonged Memory Defects Following Electrotherapy. M. B. Brody.—p. 777.

Shock Therapy in Presence of Physical Contraindications. M. Straker.—p. 780.

Nonobstructive Unilateral Hydrocephalus. A. Roberts.—p. 784.

Psychometric Method of Determining Intellectual Loss Following Head Injury.—According to Reynell, from 15 to 20 per cent of moderate or severe head injuries are followed by persisting intellectual impairment, causing loss of efficiency often increased by psychoneurotic symptoms arising from such incapacity. Deterioration of powers of sustained attention, of recent memory and of emotional control are charac-

teristic after severe head injury, but ignorance of the patient's previous capacity and personality makes estimation difficult. The method described by the author has been used by him in a military hospital for head injuries during the past eight months. It requires from twenty to thirty minutes and uses a differential test score based on tests described in Wechsler's "Measurement of Adult Intelligence." Wechsler claimed that cases of organic cerebral injury or disease showed lower scores on arithmetical reasoning, digit retention and "relational thinking" than in vocabulary, general information and comprehension, and that such differences could be used as an index of intellectual impairment. Wechsler used a battery of ten tests of which the author has selected six. Three of these, called A series, have all been found to hold up well in cerebral injury and disease; the remaining three—the B series—all tend to fail away in such conditions. The reliability of such a method as a clinical instrument depends to some extent on the experience of the user. About 10 per cent of cases with clinical evidence of intellectual loss may pass through the sieve, but in doubtful cases other tests—especially Kohls's block design tests and digit symbol, which also hold up badly in association with intellectual deterioration, should be used as supplementary tests. The author performed the test in 320 consecutive cases of head injury referred for psychiatric examination. Of these 120 cases gave a positive result on the A and B series, i. e. a difference of 10 or more between the intelligence quotients calculated on the two series of tests. Ninety-five of these were cases of moderate or severe head injury. Three hundred cases gave a significant difference between the two test scores; 90 of these were cases of moderate or severe head injury. One hundred cases were found to be "dull and backward," i. e. with intelligence quotient 60 to 85. The results in these cases were not considered to be of great significance. The best index of man's lowered efficiency is incapacity when returned to his usual work. In the majority, this acid test of efficiency was not available. It was therefore necessary to judge the validity of a positive finding by fitness or unfitness for further military service. Eighty per cent of 100 positive cases were found by medical boards, which were uninfluenced by the result of the A and B tests, to be unfit for further service; 80 per cent of subjects who were negative by the same differential test—although all were cases of moderate or severe head injury—were returned to duty.

South African Journal Medical Sciences, Johannesburg

9:75-110 (Aug.) 1944

Dental Caries in High and Low Incidence Area in South Africa: Study of Possible Contributory Factors, with Special Reference to Diet. Marguerite Malherbe and T. Okerse.—p. 75.

Assessment of Effects of Desoxycorticosterone Acetate on Perineal Swelling and Menstrual Cycle of Normal Adult Baboons. Christine Gilbert and J. Gillman.—p. 89.

Estrogen Metabolism in Baboon as Assessed by Perineal Swelling and Uterine Bleeding, with Special Reference to Problem of "Spontaneous" Rhythms Induced by Continuous Treatment with Threshold Concentrations of Estrogen. Christine Gilbert and J. Gillman.—p. 99.

*Notes on Use of Duck and Turkey Eggs for Large Scale Preparation of Epidemic Typhus Vaccine. A. P. Berkowitz.—p. 109.

Duck and Turkey Eggs for Large Scale Preparation of Typhus Vaccine.—Berkowitz used duck eggs for the preparation of typhus vaccine. He found that the average yield of vaccine per duck egg harvested on the seventh or eighth day after inoculation is 100 to 200 cc. This is approximately five times the average yield of vaccine from hen's eggs. Stained smear preparations in a high percentage of yolk sacs show almost a confluent sheet of rickettsias, quite beyond anything seen even in the most heavily infected hen's eggs. A further advantage of the use of duck eggs consists in the fact that, since the yield per yolk sac is so high, the residual proteins are correspondingly diluted, thus rendering subsequent processing easier. Preliminary protection tests in guinea pigs indicate that duck egg vaccine is at least equal in protective value to that made from hen's eggs. Comparative tests were also carried out with turkey eggs. The growth of epidemic typhus rickettsias in the yolk sac of turkey eggs is at least as prolific as that in duck eggs, the yield of vaccine being as great. The best conditions for the primary incubation of duck eggs is 102 F. in a completely humid atmosphere.

Book Notices

Modern Clinical Syphilology: Diagnosis, Treatment, Case Study. By John H. Stokes, M.D., Professor of Dermatology and Syphilology, School of Medicine and Graduate School of Medicine, University of Pennsylvania, Philadelphia, Herman Beerman, M.D., Sc.D., Assistant Professor of Dermatology and Syphilology, School of Medicine and Graduate School of Medicine, University of Pennsylvania, and Norman R. Ingraham Jr., M.D., Assistant Professor of Dermatology and Syphilology, School of Medicine, University of Pennsylvania. Third edition. Cloth. Price, \$10. Pp. 1,332, with 911 illustrations. Philadelphia & London: W. B. Saunders Company, 1944.

In comparison with the second edition, the third may be described as "more meat on a smaller skeleton." Condensation has been achieved by increased use of fine print and deletion of less important material, for some of which the reader is referred to previous editions. The excellent illustrations and text figures have been reduced in number from 973 to 911. Two chapters remain of the same size and six, including a new one on penicillin therapy, have added 99 pages, while sixteen chapters have been shortened a total of 119 pages. The chapter on the examination of the patient, illustrating methods popularized by Stokes and now well known, have been deleted, although at least one illustration has been used elsewhere. The material in the entire text has been brought up to date, and a chapter on the preliminary results of treatment of syphilis by the wonder drug, penicillin appears for the first time in a textbook on the disease.

The disconcerting problem of biologically false positive serologic reactions is discussed fully, and some sixty diseases and states are listed as causative, with reported percentage of positive reactions. "Verification" tests are not recommended as wholeheartedly as their value would seem to indicate. Adequate space is devoted to intensive systems for the public health treatment of early syphilis.

Increased interest in prevention of prenatal syphilis is reflected in enlargement by 19 pages of the chapter on familial and prenatal syphilis. The all important chapter on public health and military medicine is 40 pages longer than the corresponding one in the second edition. Herein are included public health and military aspects of syphilis, including prostitution, prophylaxis, epidemiology, a blueprint of venereal disease control and an organization chart of a city department of public health venereal disease program.

As stated in the preface, the text telescopes three books into one: "for the student, as illustrated in the summaries and the principles; for the practitioner, as illustrated in details and cases; and for the expert, as shown by the discussions and references to the literature." Pertinent references are given parenthetically throughout the text.

Treatment systems recommended are standard American systems for use in various phases of the disease. However, it would seem that the general practitioner might easily select an unsatisfactory method of treatment. For instance, use of a system approaching the Eagle-Hogan method for early syphilis, which has been recommended, among others, for the treatment of neurosyphilis, might result in even a higher percentage of toxic reactions than has been experienced in the treatment of early syphilis. The value of rest and rest periods is appropriately emphasized, but the latter are not obvious in the systems of treatment for late latent and late neurosyphilis. The value of bismuth compounds is pointed out, but all systems of therapy seem to be predominantly arsenical. Directions for terminating treatment seem to be unnecessarily vague.

The work of Stokes, Beerman and Ingraham remains the best single volume textbook for students, practitioners and specialists ever written on diagnosis, treatment and case study of syphilis. It more than ever deserves the recommendation afforded the first edition by a leading European professor of dermatology who presented it to his students as a "ganz wundrous Buch."

Report on the Incidence of Rickets in War-Time. By The British Paediatric Association. Reports on Public Health and Medical Subjects No. 92, Ministry of Health. Paper. Price, 25 cents; 9d. Pp. 36. New York: British Information Services; London: His Majesty's Stationery Office, 1944.

The purpose of the investigation was to determine whether there had been any change in the incidence of rickets during wartime. A total of 5,283 children between the ages of 3 months and 18 months were examined. They were selected from

twenty-three centers in the British Isles. The authors point out the great difficulty in the clinical diagnosis of mild rickets and also emphasize the fact that the radiologic diagnosis may often be in doubt. Of the 5,283 children, 106 were found to have radiologic evidence of rickets. In the children from 3 to 6 months of age the incidence was 2.5 per cent, between 6 months and a year 4 per cent, and practically none beyond this age. The clinical diagnosis of rickets showed great variability in different centers, being nil in some and as high as 61 per cent in others. The correlation between the clinical and the radiologic diagnosis of rickets was extremely poor. As a result of their studies the investigators conclude that there has been no demonstrable increase in the incidence of rickets in Great Britain during the war.

Fractures and Fracture Treatment in Practice. By Kutt Colsen, M.D., Tutor to the Department of Surgery, Registrar to the Surgical Firm of the University of the Witwatersrand, Johannesburg. Second edition. Cloth. Price, 12s. 6d. Pp. 154, with 163 illustrations. Johannesburg: Witwatersrand University Press, 1944.

This book is based on the author's course in surgery at the University of the Witwatersrand in Johannesburg, South Africa. His demonstrations have been amplified by a number of simple diagrams and a succinct manuscript which should help the medical student grasp the important features involved in the treatment of fractures. The aim of the book is to present a concise review in response to requests from students preparing for examinations and general practitioners desiring a review of the subject. Attention has been paid more especially to the clinical side of fractures and their treatment. He has accomplished his purpose, especially in view of the more frequent occurrence of bone injuries brought about by the increasing number of war, industrial and traffic accidents, which has made the subject of fractures more and more important for students and practitioners. This small book was not intended to serve as a substitute for the many excellent large textbooks on fractures. The diagrams are simple and instructive. The author acknowledges his indebtedness to Böhler's "The Treatment of Fractures" and R. Watson Jones's "Fractures and Other Bone and Joint Injuries." The book can be recommended highly to the practicing physician and surgeon.

Sulphonamides in the Treatment of Meningococcal Meningitis. Report to the Scientific Advisory Committee, Department of Health for Scotland. Paper. Price, 10 cents; 4d. Pp. 20, with 2 illustrations. New York: British Information Services; London: His Majesty's Stationery Office, 1944.

In this pamphlet is presented a study of 2,223 cases of meningococcal meningitis observed in Scotland from 1936 to 1941. The figure stated represents about 40 per cent of all reported cases. Statistics show the effects of different methods of treatment, and comparisons are made in fatality rates before and since the introduction of chemotherapy. The authors believe that antitoxin or serum in combination with the sulfonamides does not promote therapeutic efficiency. However, this view is based apparently on the theory that, with the combined method, antitoxin or serum would be administered intrathecally. No definite preference is expressed for any one of the three sulfonamides used. Most of the patients received sulfapyridine, and the fatality rate for these was 17.17 per cent. For smaller groups the sulfanilamide rate was 9.37 and for sulfathiazole 14.6. The rate with serum or antitoxin alone was 51.76, but presumably these patients were treated intrathecally—not by the intravenous method of Hoyne. In discussing the complications occurring during treatment with the different drugs, it was found that sulfanilamide secures a less permanent and rapid effect than either sulfapyridine or sulfathiazole, and that pneumonia was a more frequent complication. Patients treated with the combined method, serum and drugs, required a much longer stay in the hospital than those to whom the drugs alone were administered. It is stated that the sulfonamide drugs have caused a reduction in the fatality rate to 16.7 per cent. Attention is directed to the fact that mortality is greatest under 2 and above the age of 35. Tables and graphs clearly illustrate the analysis of the cases studied. The report reveals what may be anticipated when treating cerebrospinal fever with sulfonamides.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

EFFECT ON SYPHILIS OF PENICILLIN TREATMENT FOR GONORRHEA

To the Editor:—Penicillin is being used for the treatment of acute gonococcal urethritis. In the follow-up, serologic tests for syphilis are taken to determine if there might not have been concomitant infection with this organism. Is it known whether or not the use of penicillin before the appearance of the primary chancre would have any effect on the development of this lesion? Would it have any effect on the serologic reaction in doses of 100,000 to 200,000 units?

P. T. Green, M.D., Winnipeg, Man.

ANSWER.—There have been a number of reports of a delayed incubation period for primary syphilis after the treatment of the patient for gonorrhea with 100,000 to 200,000 units of penicillin. Such subcurative treatment for syphilis given for gonorrhea may either lengthen the incubation period of simultaneously acquired primary syphilis or suppress the primary lesion of the disease altogether, the existence of syphilis being subsequently recognized only by means of routinely repeated serologic tests of the blood. Because of this suppressive action of penicillin, it becomes the more essential to perform routine serologic tests for syphilis in all gonorrhea patients treated with penicillin, if possible monthly for three months following treatment, or as a minimum three months after the completion of penicillin treatment. There is no information as to the effect of 100,000 to 200,000 units of penicillin given in one day on the blood test of a patient with an already existing positive serologic reaction.

KELOIDS FOLLOWING REMOVAL OF PIGMENTED MOLES

To the Editor:—Six months ago I began removing several small pigmented unelevated moles from the face and neck of a girl aged 12 by injecting several drops of procaine hydrochloride under each lesion and then touching lightly with an electric needle. Good results with almost no scar were obtained on the first four. The last two I did about three months ago; at the site of each of the latter there is now a keloid, one 3 mm. in diameter at the tip of the chin and the other 5 mm. in diameter midway between the angle of the left ala nasi and the lip. The elevation of each is about 1 mm. Is there any reasonable expectation that these will subside spontaneously? If not, what is the correct treatment? How soon must treatment be attempted?

M.D., South Dakota.

ANSWER.—These lesions probably will not subside spontaneously. Radiotherapy is the correct treatment. It is essential in giving such treatment that the normal skin to the edge of the lesion be shielded with lead foil. Radiotherapy in the amount of 225 roentgens, unfiltered, should be given once a month; an erythema should be avoided. It is difficult to set the maximum number of such treatments, but in a case like this probably four treatments would suffice. During the course of treatment the skin should be observed frequently and carefully for evidence of injury.

PULL ON ABDOMINAL MUSCLES AFTER INCISION

To the Editor:—Since there has been a trend toward getting patients out of bed the same day as their operation and making them walk early, we have been wondering how much lateral pull (pounds) is placed on the incision: (a) when the patient is lying quietly in bed; (b) when the patient is standing; (c) when the patient is coughing, sneezing and vomiting. What is the number of pounds pull on a vertical or longitudinal incision as opposed to the transverse? If disruption should occur, a person who opposes early ambulation might say that the disruption would not have occurred had the patient not been standing.

Raymond L. Evons, M.D., Soyre, Po.

ANSWER.—Sloan (Sloan, G. A.: A New Upper Abdominal Incision, *Surg., Gynec. & Obst.* 45:678 [Nov.] 1927) measured in man the force required to bring the ends of severed transverse fibers together after a longitudinal abdominal incision with the patient lightly anesthetized. The tension was measured with spring scales attached to several forceps. The same procedure was applied to a transverse incision in which the rectus muscles had been cut transversely. He found that the longer the longitudinal incision, the more force was required to bring the ends of the fibers of the divided aponeuroses together. In a 3 inch longitudinal incision immediately after the incision is made and before the oblique muscles have retracted the aponeuroses, about pounds of pull will bring the aponeuroses together during

light anesthesia; while in a 4 inch incision it will require nearly 50 pounds to bring the ends of the aponeuroses together. If the incision is lengthened to 5 inches, it will require about 80 pounds. Sloan deduces that the lateral pull on the suture line following a longitudinal abdominal incision is in proportion to the square of the length of the incision. When complete relaxation is not present, the lateral abdominal tension is about thirty times as great as the vertical; therefore the strain on the suture line of a longitudinal incision is thirty times as great as that on the suture line of the transverse incision. The lateral pull on the incision is greatly increased when the patient is coughing, sneezing or vomiting. Measurements of these increases have not been undertaken thus far. Sloan is the only attempt to measure the pull of the abdominal muscles following incision.

IMPAIRED HEARING IN VETERAN

To the Editor:—A patient has lost 50 per cent of his hearing following prolonged exposure to gunfire. This occurred over a six months period and has persisted for a year following removal from the locale of the gunfire. The patient is bothered also with persistent tinnitus. Various methods of therapy have been employed without success, including vitamin and histamine. I should like suggestions as to therapy and, more particularly, psychotherapy in the way of reading material that would assist the patient in understanding and in adopting himself to his condition. He is beginning to withdraw somewhat from his friends. Perhaps there are some simple textbooks that might assist him. He is 22 years old, a high school graduate, and of more than average intelligence for his scholastic achievement.

Coptain, M. C., A. U. S.

ANSWER.—The tendency for the patient to withdraw from his normal social contacts is unfortunately more or less typical of those with impairment of hearing, and it is essential that assistance be given to prevent any permanent damage to the personality. In many cases, particularly when hearing loss has been sudden, psychiatric treatment has been helpful. The following reading material might be helpful: "Lip Reading, Principles and Practice" by Nitchie, new edition, the Frederick & Stokes Company, New York. "How to Help Your Hearing," by Louise M. Neuschütz, Harper & Brothers, Publishers, New York, 1940. "Your Hearing: How to Preserve and Aid It," by Wendell C. Phillips and Hugh Grant Rowell, Publishers, D. Appleton and Company, New York, 1932. In addition, reprints of articles on subjects relating to hearing problems may be obtained at low cost from the American Society for the Hard of Hearing, 1537 Thirty-Fifth Street N.W., Washington, D. C.

The fitting of the hearing aid and providing lip reading instruction are important means of assisting a patient with impairment of hearing to make an adjustment to his condition. An all inclusive program of diagnosis, treatment and rehabilitation of returned veterans has been adopted in at least three general hospitals. The American Red Cross also assists the deafened veteran in his return to his home community and in the interpretation of his condition to his family. In several areas there are local societies for the hard of hearing.

METAPHEN AND UNDULANT FEVER

To the Editor:—I understand that in some naval hospitals metaphen is being used intravenously in the treatment of undulant fever. I have been unable to find any information on this subject. Could you give me the dosage, technique and administration as well as the dangers of this form of treatment? What are the results of this method?

M.D., Arizona

ANSWER.—Apparently the first published use of metaphen in the treatment of brucellosis was by A. C. Fortney (*Minnesota Med.* 16:335 [May] 1933). He treated 1 patient in the early severe phase of disease, administering 10 cc. of the undiluted 1:1,000 solution intravenously on two occasions, six days apart. The patient became afebrile and asymptomatic six days after the second injection and is known to have remained well, with a high specific agglutinin titer, for at least one month.

No other references with either precise or quantitative information have been found, but there are at least four reviews, written by careful students of this disease, which state that the therapeutic properties of metaphen are not proved, are discouraging or are disappointing; e. g., Angle and Algie (*J. Kansas M. Soc.*, 41:233 [June] 1940), Simpson (*Ohio State M. J.* 36:1053 [Oct.] 1940), Tice's *Practice of Medicine*, 1940, volume 4, page 106, Barr's *Modern Medical Therapy in General Practice*, Baltimore, William Wood & Co., 1940, volume 2, page 1324.

Owing to the variability of human brucellosis in severity and duration and to its remarkable features of latency, late relapses and recrudescences, uncontrolled therapeutic studies on small numbers of patients have little value. At present there is no single form of treatment known that gives wholly reliable results in this infection.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 127, No. 9

CHICAGO, ILLINOIS
COPYRIGHT, 1945, BY AMERICAN MEDICAL ASSOCIATION

MARCH 3, 1945

THE SURGICAL TREATMENT OF PROLAPSE OF THE UTERUS

RICHARD W. TELINDE, M.D.
BALTIMORE

There is no subject in gynecology which can evoke more discussion among gynecologists than the treatment of uterine prolapse. In several clinics in this country vaginal panhysterectomy is done almost routinely to cure this condition; in others the Watkins interposition operation is the standard treatment, in others the Manchester operation is done and in still others extensive vaginal plastic work is combined with some type of intra-abdominal suspension. In general there has been a trend in the past two decades toward doing the entire procedure by the vaginal route unless intrapelvic disease necessitates laparotomy. It is my opinion that one should not approach the subject with a fixed plan of operation. Each case should be judged and treated as an individual problem. In selecting the best operative procedure in an individual case several factors must be taken into consideration. The most important of these factors are:

- The general physical condition of the patient.
- The desirability of preserving menstruation.
- The desirability of preserving the childbearing function.
- The degree of descensus.
- The condition of the cervix and corpus uteri.
- The presence of, and degree of, cystocele.
- The presence of, and degree of, rectocele or enterocele.

All of these factors will be considered in discussing the various operative procedures discussed in this paper for the cure of prolapse and allied conditions.

As I express my opinion on the various operations and their indications I realize fully that there is room for honest difference of opinion on this subject. There is no doubt that in many cases equally satisfactory results may be obtained by more than one method. If this were not true there would not be such strong adherents of the different types of procedure. It is assumed that each surgeon who strongly defends a particular operation does so believing that that procedure is giving satisfactory results in his hands. There is no doubt that the skill of the individual operator, in a particular operation, is a great factor in his results. But no matter how skillful one may become in a favorite procedure one should never permit one's enthusiasm for it to overcome one's judgment as to its indications.

From the Department of Gynecology, Johns Hopkins University and Hospital.

Read before the Section on Obstetrics and Gynecology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

ANATOMIC CONSIDERATIONS.

In discussing the cure of prolapse of the uterus it is advisable to consider, first, the supporting structures which have failed to hold the uterus in correct position and how best to utilize these supporting structures in restoring the uterus to its normal position or in supporting that portion of the uterus which is permitted to be retained and/or the vagina.

The structures which are concerned in maintaining the uterus in normal position are:

The round ligaments.

The uterosacral ligaments.

The bases of the broad ligaments (cardinal ligaments: ligamentum transversalis colli, Mackenrodt).

The fascia lying between the anterior vaginal wall and the vagina (subvesical fascia or pubovesicocervical fascia).

The fascia lying between the posterior vaginal wall and the rectum.

The floor of the pelvis (the pubococcygeal fibers of the levator ani muscles).

The function of the round ligaments is to draw the uterus forward to its normal anatomic position after it has been displaced backward physiologically by bladder distention or by pregnancy. Once returned to its normal position forward, the intra-abdominal pressure on the posterior surface of the uterus holds it forward. Increased intra-abdominal pressure, such as that caused by straining at hard work or defecation, causes slight temporary descent of the anteposed uterus. If the supports of the uterus are adequate, the uterus promptly returns to its former level. When the uterus is congenitally retroposed, or when the round ligaments fail to bring it forward after physiologic displacement backward, intra-abdominal pressure tends to force the uterus downward into the vagina like a piston in a cylinder. If the other supporting structures are sufficiently firm, the uterus may be maintained at its normal level despite the mechanical disadvantage of retrodisplacement, but a greater strain is put on the other supporting structures than when the uterus is anteverted.

The uterosacral ligaments, which are part of the endopelvic fascia lying subperitoneally, extend from the cervix back to the sacrum; they hold the cervix back and also aid in holding it up. Congenitally long ligaments, or ligaments which have lost their tonus as the result of pregnancy, permit the cervix to be displaced forward and downward; this allows the corpus to be displaced backward until the axis of the uterus and that of the vagina coincide. Intra-abdominal pressure then can work to advantage in forcing the uterus down in the vagina.

comfortable with some type of pessary. It is not within the scope of this paper to discuss the indications for and proper use of the various types of pessaries.

Since the Spalding-Richardson operation for prolapse is not generally known and since I have found it

mucosa clip grasps the urethral meatus and slight traction is made on it anteriorly. If the cystocele is large, the midline of the anterior vaginal wall is grasped with a succession of mucosa clips from the urethral meatus to the cervix so that the mucosa may be put on a

stretch. A transverse incision is made through the reflexion of the anterior vaginal mucosa onto the cervix about 1 or 2 cm. from the external os. The point of a Mayo scissors is inserted beneath the mucosa in the midline and the anterior vaginal wall is separated from the bladder in the midline by alternately opening and closing the scissors. The mucosa clips are successively removed as each is reached. As each segment of 3 or 4 cm. is separated, the vaginal mucosa is cut in the midline, ultimately forming the usual inverted T shaped incision, as in the first step of the cystocele operation.

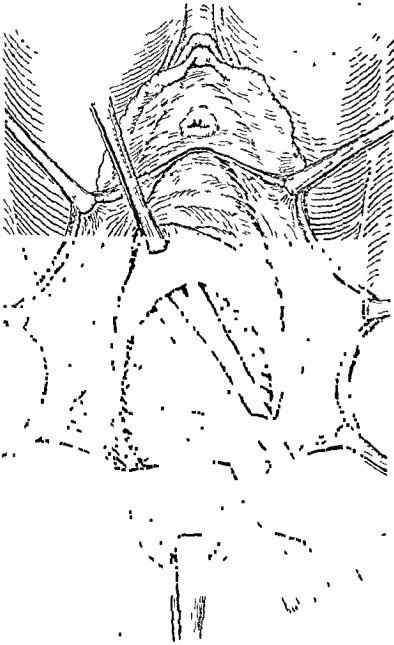
The bladder is then dissected from its attachment to the cervix, first with the scissors, and then a line of cleavage is found which may be followed with the finger until the vesico-uterine pouch of peritoneum is reached (fig. 5).

The edges of the vaginal flaps which have been grasped with mucosa clips are spread out by assistants and the pubovesicocervical fascia is dissected from each flap (fig. 6). In the midline this fascia is quite thin, but laterally it is usually quite sturdy.

The cervix is next amputated. Different technics are permissible for this, but I prefer the technic as shown in figure 7. The posterior lip of the shortened cervix is covered with a flap of mucosa which has been dissected free and then drawn into the canal with a mattress suture. The cervical amputation is much less bloody if the cervical branches of the uterine vessels are first ligated bilaterally.

The vesico-uterine pouch of peritoneum is incised as indicated by the dotted line in figure 6 and the fundus delivered. I have found that traction sutures placed at successively higher levels in the uterine corpus are very useful for this. If the fundus is large and delivery difficult it is usually a drier procedure to make the delivery by traction sutures than by tenaculum. If the fundus is small it may be easily and quickly delivered either by traction sutures or by tenaculum. If the fundus is so large that it is brought forth with difficulty, a wedge shaped piece may be excised as in figure 7.

The uterine end of the round ligament, tube and ovarian ligament are triply clamped *en masse*, cut and doubly ligated with number 2 chromic catgut. This is repeated on the opposite side (fig. 8). A supra-vaginal amputation is done at the desired level. Before



Spalding Richardson operation for uterine prolapse.

Fig. 5.—An inverted T shaped incision has been made and flaps have been dissected lateralward. Bladder is being dissected free from its attachment to the cervix.

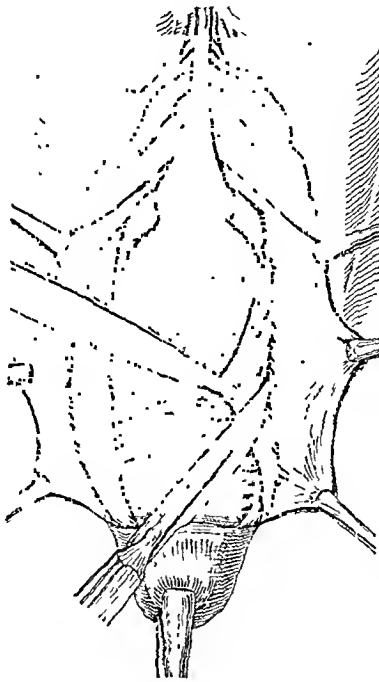
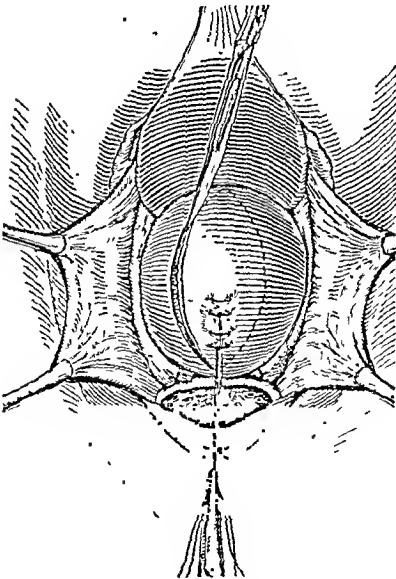


Fig. 6.—Vesicoperitoneal fold of peritoneum has been exposed. Transverse dotted line shows line of incision. Fascia is being dissected from flaps of vaginal mucosa.



Spalding Richardson operation for uterine prolapse:

Fig. 7.—Fundus is being delivered by traction sutures. Because of its large size in this case a wedge shaped piece of myometrium is being excised. Cervix has been amputated.



Fig. 8.—Corpus is completely delivered. Round ligament, tube and ovarian ligament are clamped *en masse*, cut as indicated by dotted line and doubly ligated.

such a satisfactory procedure, the technic is here described:

With the patient in the lithotomy position and after the usual vaginal cleansing the anterior lip of the cervix is grasped and the cervix drawn to the outlet. A

making the amputation, the ascending uterine vessels are clamped and ligated below the point of amputation as shown in figure 9. It is well to make this a V shaped cut, as is done in abdominal supravaginal hysterectomy, to facilitate closure. Closure of the stump is

The pubovesicocervical fascia is then brought together in the midline by interrupted sutures of number 0 chromic catgut beginning beneath the urethra, continuing beneath the base of the bladder and finally covering the stump of the uterus (fig. 11).

The anterior lip of the cervix is then covered over with vaginal mucosa, flaps of which have been trimmed down to the proper size for closure (fig. 12). The closure of the vaginal incisions laterally, and of the midline incision, completes the operation (fig. 13).

The pelvic floor and rectocele are then repaired as indicated by the degree of relaxation and size of the rectocele. If an enterocele is present, it likewise is repaired.

In the private service of E. H. Richardson and of R. W. TeLinde and in the public ward service of the Johns Hopkins Hospital the operation has been performed on approximately 100 women. Many of these have been done too recently to be of value in a follow-up study. About a year and a half ago we got back for questioning and examination 33 women who were operated on from five years to six months before. All 23 private patients in the group had excellent anatomic results and were completely relieved symptomatically. Among 10 public ward patients there were 3 who did not admit complete relief. In 2 of these there was a perfect anatomic result, but in the third there was a moderate cystocele with slight stress incontinence. Among these public ward patients there were, of course, the overworked women with few social advantages, few intellectual resources and multiple complaints. Since the anatomic result was perfect in 2 of these 3 women, I feel that it is scarcely justifiable to attribute their incomplete relief to the operation.



Fig. 9.—Corpus is being amputated from cervix. Uterine vessels are ligated as indicated by sutures.



Fig. 10.—The incision in the upper portion of the cervix is closed with interrupted sutures. The tubes, ovarian ligaments and round ligaments are sutured to the cervix.

done with interrupted or figure 8 stitches of number 2 chromic catgut as shown in figure 10. The cut ends of the tubes and of the round and ovarian ligaments are sutured to the stump, as indicated in figure 10.

The isthmic portion of the uterus which remains is shown in the diagram in figure 14. It will be noted that it has an ample blood supply. The uterosacral and bases of the broad ligaments are attached to this remaining segment, and these structures are utilized in building up support of the vagina.

The edge of peritoneum formed by entering the vesicouterine peritoneal pouch is then sutured to this

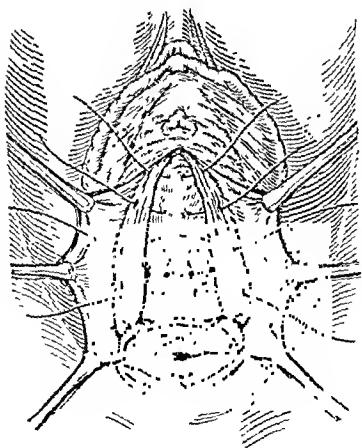


Fig. 11.—Pubovesicocervical fascia is to be approximated beneath urethra, base of bladder and cervical stump.

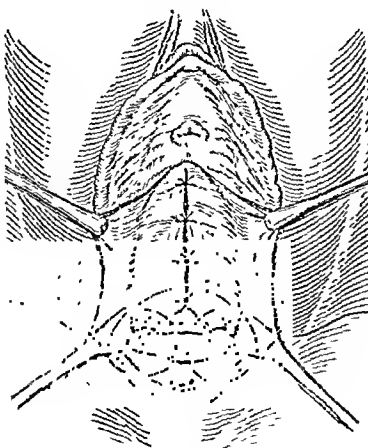


Fig. 12.—Fascia has been completely approximated, and anterior lip of shortened cervix is about to be covered with the split flap of vaginal mucosa.

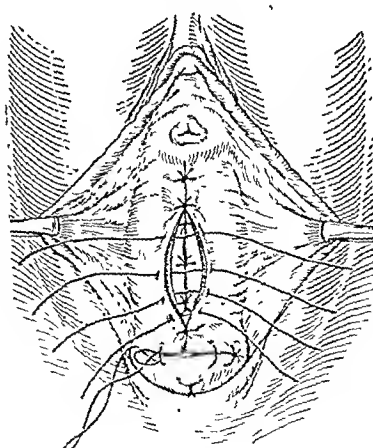


Fig. 13.—Final sutures approximating the vaginal mucosa, which has been trimmed to appropriate proportions.

remaining portion of the uterus. It is well to make the suture posterior to the incision line in the uterine musculature so that, in case there is any postoperative hemorrhage, the bleeding will be external and not intraperitoneal.

The Spalding-Richardson operation meets the desired objective of an operation for uterine prolapse when further pregnancies are not desired. The diseased portion of the cervix is removed, thus removing a source of leukorrhea and a potential site of neoplasm.

The corpus uteri is removed and with it the danger of endometrial cancer as well as fibroids. The bases of the broad ligaments and the uterosacral ligaments have not been crushed as in vaginal hysterectomy and are preserved for support of the vagina. Our follow-up study shows that the vagina is well suspended and is of normal depth and caliber.

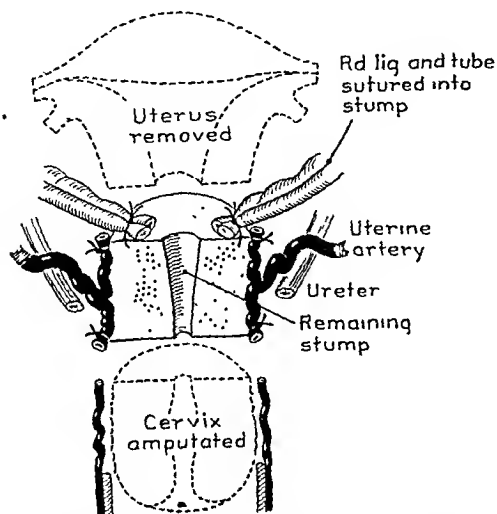


Fig 14—Spalding Richardson operation for uterine prolapse: Diagram indicating the portion of the uterus that remains. Note that blood supply is intact.

My chief purpose in describing this operation and its results in detail is to stimulate interest in this relatively new operation. Only by the widespread use of any new operative procedure can its general usefulness be evaluated.

101 West Read Street.

ABSTRACT OF DISCUSSION

DR. GEORGE H. GARDNER, Chicago: Every one agrees that it is desirable to approach the problem of treating uterine prolapse with an open mind: i. e., no single operation is applicable to all cases, and each patient must be individualized. Dr. TeLinde mentions many factors which should be considered in selecting the most appropriate operation, viz. (1) the patient's general physical condition, (2) the advisability of continuing the menstrual phenomenon, (3) the desirability of preserving the childbearing function, (4) the degree of descent, (5) the condition of the cervix, (6) the condition of the corpus, (7) the degree of cystocele, (8) the degree of rectocele and (9) the presence and/or degree of enterocele. All of us would do well to consider each of these factors systematically before operating on any prolapse. Then we could not routinely employ any one operative procedure on every patient. Dr. TeLinde mentions the various ligamentous and fascial structures responsible for maintaining the uterus in its normal position. However, we doubt if he has emphasized adequately the importance of the cardinal or Mackenrodt's ligaments in the problem of prolapse. He also refers to various stages of prolapse as first degree, second degree and third degree. It is regrettable that he does not define these terms, so that those of us from the hinterland could understand what they denote on the Atlantic seaboard. I question the advisability or referring to the Spalding-Richardson operation for prolapse as a new procedure. To my knowledge vaginal supracervical hysterectomy with extensive plastic repair has been employed in Chicago for many years in the correction of prolapse. One has difficulty in recognizing the advantages of this operation over removal of the uterus in toto. Consequently I wish that Dr. TeLinde had told us more about the postoperative course of these women. I am not pleased with the incidence of complications after vaginal hysterectomies with extensive plastic repairs that I have performed

to correct a uterine prolapse complicated by pronounced cystocele, rectocele and enterocele. Too many of these women have a febrile convalescence, and a considerable percentage have vaginal drainage about a week after operation. I would be tempted to employ the Spalding-Richardson operation more frequently if Dr. TeLinde could give assurance that it is rarely followed by these annoying complications.

DR. ROLAND S. CRON, Milwaukee: Dr. TeLinde presents the problem of the surgical treatment of prolapse of the uterus in a practical, logical and scientific manner. One must agree with his statement that the type of operation performed should fit the needs of the individual case. Certainly no one operative procedure should be utilized as a routine. One hundred consecutive case histories from my private practice dated before 1942 showing various degrees of uterine prolapse with associated pathologic conditions in the pelvis have been reviewed. It was found that vaginal hysterectomy was the operation of choice in 47. Of this group 19 were classified as having a third, 17 a second and 4 a first degree descent. The average age was 56. The next largest group, comprising 18 patients, 1 of whom had a first, 7 a second and 2 a third degree prolapse complicated by extensive cystocele formation were served by the Watkins transportation operation. The average age was exactly the same. The Manchester Fothergill operation with appropriate plastic additions was used in 10 per cent of the cases. This was the procedure of choice when the lesser degrees of procidentia and cystocele formation were found to be present in the patient of more advanced age. A modified type of Simpson suspension of the round and approximation of the sacrotuberine ligaments combined with a vaginal plastic procedure was considered to be sufficient for 9 patients, all in the childbearing age and presenting a similar degree of procidentia. Another 10 per cent of the patients, well advanced in years, experienced a cervical amputation with plastic correction of the bladder and posterior vaginal walls. The remaining 6 patients had amputation of the cervix and fundus, plus plecting of the bladder fascia and perineorrhaphy according to the Spalding-Richardson technique. Neither the LeFort colpoeleisis nor ventral fixation of the uterus was utilized in this series. Suturing of the fundus to the anterior abdominal wall is most unphysiologic, and frequently the adjacent adnexa become involved in a mass of adhesions. The procedure often fails to correct permanently the prolapse and in itself affords no support to the cystocele. As a matter of fact, polyuria and dysuria often follow. The best end results were uniformly obtained following vaginal hysterectomy. Failures have been frequently observed following the Watkins technique. Excellent results were obtained with the Manchester Fothergill operation. The Spalding-Richardson principle should be an ideal procedure for the lesser degrees of prolapse. Has the author obtained the same satisfactory results in the patient presenting complete procidentia with huge cystocele formation? Following the correction of a large cystocele, a previously competent urethral sphincter may become incompetent and stress incontinence may appear. A Kelly stitch or Berkow type of urethral elongation, angulation and reconstruction operation will usually correct this annoying symptom.

DR. J. E. CANNADAY, Charleston, W. Va.: I have found that in some cases of uterine prolapse, especially those in which the floor of the pelvis is badly herniated, a definite suspension and fixation of the cervix may possess certain advantages. The procedure that I have carried out occasionally has been about as follows: 1. Preliminary conization of the cervix is done for the purpose of eliminating as far as possible the possibility of cancer. 2. Any indicated vaginal repair is done. 3. After sub-total hysterectomy the cervical stump is drawn upward and total hysterectomy the cervical stump is drawn upward and firmly attached to the periosteum of the tuberculum pubis by the use of a strip of fascia lata or, preferably, a strip of skin from which the epidermal layer has been removed. This strip of cutis is taken from the edge of the abdominal incision. It makes most satisfactory fixation material. In my experience no recurrence of prolapse has been noted. I believe this method gives permanent support.

DR. JOHN M. FALLON, Worcester, Mass.: Of some 600 operations for prolapse done by my father and myself only a few were Richardsons, but I liked the operation. One discussor asked what advantage it had over vaginal hysterectomy. It

leaves the suspensory apparatus attached to the uterus although giving enough exposure to tighten it if needed. That may be an advantage. It may be some disadvantage that carcinophilic cervical tissue remains. The difference between the Richardson, vaginal hysterectomy, interposition or Manchester is small compared to the difference between any one of those and abdominal suspension. Vaginal operations go to the site of the disease, the suspensory apparatus. Abdominal operations suspend a symptom. Results are what one would expect. I summarized some of them in the *New England Journal of Medicine* in 1939. The principle of vaginal approach, although still not universally accepted, was proved long ago. The possible exception to the rule of vaginal operations is the woman who will have more children. Most of us still use the suspension operation, but I prefer the Manchester done without amputation of the cervix. This is another little known operation first proposed, as far as I know, by J. W. A. Hunter of Manchester in the *British Medical Journal*, June 18, 1938. You might be interested in still another excellent operation which seems relatively unknown: a colpocleisis by Labhardt of Basel (*Schweiz. med. Wchenschr.* 64:643 [July 14] 1934). It has replaced the LeFort (more properly Neugebauer) in my regard. A perincorrhaphy continued upward across the introitus to the level of the urethra, this Labhardt avoids the Neugebauer's pull on bladder and urethra and, being more outside the body, is better adapted to the worst possible situations, the old and feeble who are natural candidates for colpocleisis.

DR. CHANNING W. BARRETT, Chicago: Prolapse is a wandering of organs in the abdomen, usually downward. In the man and in four footed animals it is downward, but in man it is toward one wall, the caudal wall, and in the four footed animals it is toward the ventral wall. The stomach, the transverse colon and the gallbladder arc prolapsed because they have wandered downward, but eventually they might come through the umbilical opening and become a hernia. We should be foolish to continue the consideration of this as a prolapse and talk about operating on prolapse of the stomach when it was down in the umbilical opening, but that is just what we are doing with these other conditions. They are prolapsed as long as they are downward, and any structure may travel downward, and eventually many of them might come to the pelvis and lie against the pelvic floor, but when they find an opening and go through that opening they are no longer prolapse in the clinical sense. They become something altogether more important. They become hernias, and as hernias they take on new phases of disturbance. Their circulation is disturbed. Their pedicle is disturbed. Their function is disturbed, and so we are dealing with the condition known as hernia. In a herniation shall we leave the uterus in or shall we take the uterus out? That depends on the pathologic condition in the uterus. Nearly all herniations of the uterus can be saved if the age of the patient and the pathologic condition in the uterus demand their being left. Is this herniation severe enough so that the bladder is herniated badly and the rectum is herniated badly and they must be attended to? If so, we must do something to hold the bladder up and to hold the rectum up and either take the uterus out or put it back in position. There are different things to cure the hernia of the uterus. First we must give a good pelvic floor, that is, the caudal wall to the abdomen. Next we must change the vaginal direction so that it goes from the symphysis back to the hollow sacrum, because it is a principle of support to have that wall at an oblique direction. Next we must lessen the vaginal opening so that the vaginal wall will not prolapse through there. The ring for the hernia is in the pelvic floor. The vagina, the uterus and the rectum are a part of the herniated structure.

DR. U. J. SALMON, New York: The Spalding-Richardson operation is a valuable addition to gynecologic surgery. I should like to draw attention to a surgical procedure for the cure of prolapse which is technically simpler and which has been used with consistently good results at the Mount Sinai Hospital of New York during the past twelve years, viz. the parametrial fixation operation. This is a modification of the Donald-Fothergill-Manchester operation, which was introduced by Dr. Robert T. Frank in 1932. In 1937 I reported in the *American Journal of Obstetrics and Gynecology* a series of 254 cases of

prolapse (consisting of 126 cases of first degree, 55 cases of second degree, 35 cases of third degree and 8 cases of prolapse of the cervical stump) which had been treated by the parametrial fixation operation during the preceding five years. There was only 1 case of recurrence of the prolapse in this series. In the intervening seven years the same operation was performed in approximately 200 more cases, with approximately the same satisfactory results. The operation has a number of advantages over other surgical operations for prolapse: 1. The comparative simplicity of technic permits of its standardization and facilitates its being taught to residents. (During the past several years the majority of operations were performed by the residents or junior staff members.) 2. Morbidity and mortality are low. 3. The coital function of the vagina is not compromised. 4. The operation does not preclude the possibility of subsequent pregnancy. 5. If necessary the oviducts can be ligated at the same time by the vagina. It seems to me that the parametrial fixation operation approaches very closely the theoretical desiderata of the ideal operation for prolapse, viz., anatomic as well as physiologic restitutio ad integrum with a minimum of risk to the patient.

DR. R. C. AUSTIN, Dayton, Ohio: My efforts to obviate the shortcomings of the vaginal hysterectomy began a few years ago and I have done 79 of these procedures. The results have been highly satisfactory, far more satisfactory than any type of procedure that I have done, and having been brought up on the vaginal hysterectomy and the interposition operation, I feel that I can make a comparative statement. Some shortcomings or some criticisms of this procedure have been its technical difficulties. It is not too technical. The average time for the operation is about an hour and fifteen minutes. Another criticism has been that the cervix that is left remains the site of a possible neoplasm. Dr. TeLinde did not emphasize that he usually comes out the cervix, as we usually do. I have been highly pleased with the results of this operation.

DR. C. GORDON JOHNSON, New Orleans: The importance of correcting the pelvic floor has not been thoroughly emphasized, and I am quite sure that the majority of instances of recurrence of uterine prolapse that have followed the simple abdominal procedure are due to the fact that the relaxation of the pelvic floor has not been recognized and has not been adequately taken care of. The utilization of shortening of the uterosacral ligaments has not been emphasized. This is of importance in keeping the cervix in its proper place. In New Orleans we use a modified form which we call a "Simpson-Kelly suspension." The Simpson part is the shortening of the round ligaments, bringing them through the inner inguinal ring and suturing them to the posterior surface or the undersurface of the anterior rectal sheath. We use the Kelly part in bringing the uterosacral ligaments together and suturing them to the posterior peritoneum of the lower uterine segment. This is to keep the cervix in place. For a prolapse, second or third degree, in elderly women or in women past 35, I believe that the vaginal hysterectomy is the procedure of choice. We find no difficulty in doing it; even our residents at the Charity Hospital in New Orleans, where we have an extensive service, do this operation. In the young woman we rarely do anything other than the Simpson-Kelly suspension. We have used it for the last fifteen years and have been successful with it. This procedure was used by the late Dr. C. Jeff Miller, from whom I learned it.

DR. K. M. MARTZLOFF, Portland, Ore.: I just want to ask Dr. TeLinde two questions which I think will be informative for all of us. Do you suture the transverse cervical ligaments? and Do you suture the stump of the cervix to the pubic arch between the urethra?

DR. RICHARD W. TELINDE, Baltimore: I do want to tell Dr. Gardner that never since I have been in Baltimore have I routinely used the interposition operation for prolapse. Dr. Richardson formerly did the vaginal hysterectomy for prolapse and it was dissatisfaction with the vaginal hysterectomy that made him turn to this new operation. I don't have an opportunity to follow up the Chicago vaginal hysterectomies often, but a few weeks ago I saw a woman who had had a vaginal hysterectomy in Chicago by a noted surgeon. She complained bitterly of shortening of the vagina. I have never heard of that complaint with the Spalding-Richardson operation. Dr.

Gardner asked about the postoperative course of these patients. I don't believe it is any different than that after vaginal hysterectomy. In our hundred cases, we have no mortality to date. Of course, we are sure we shall not keep that up. I have had 2 women in fairly profound shock due, I believe, to difficulties in delivering the uterus, but one might have had those same difficulties if one was doing the vaginal hysterectomy. The ultimate results were really excellent in the 33 patients whom we had back for examination about a year and a half ago; some of these had had operations done as long as four or five years before. Twenty-six of these had been done by private practitioners and the results, as far as I could see, were perfect. The rest had been done by the house staff, there was 1 that had a recurrent cystocele and 2 others failed to admit complete symptomatic relief, although anatomically the vagina seemed to be quite normal. I agree with everything that Dr. Barrett has said about hernia. This is a hernia. I neglected to say much about the perineal repair part of the operation. I took that for granted since that is an old story with most of us and time is limited. There have been no ureteral injuries in this operation in our hands. We stay away from the ureters, which are close to the uterus just about at the point where the uterine vessels approach the uterus. The uterine vessels are left intact to supply the cervical stump. Dr. Martzloff asked two questions: Do we ever bring the stump up under the symphysis? Yes, we do. When there is a large cystocele I think it is an excellent thing to do, because then one gets more of the advantages of the old interposition operation without the disadvantages. The other question was whether we ever suture the cardinal ligaments anterior to the stump. When there is a pronounced descensus I frequently do that. By so doing one can have all the advantages of the Manchester operation without the disadvantages of cutting and crushing the bases of the broad ligaments.

HIGHLIGHTS ON EPIDEMIC DISEASES OCCURRING IN MILITARY FORCES

IN THE EARLY PHASES OF THE WAR IN
THE SOUTH PACIFIC

COMMANDER JAMES J. SAPERO (MC), U.S.N.
AND
LIEUTENANT COMMANDER FRED A. BUTLER
(MC), U.S.N.

Early in 1942 American military forces began their countermove to stem the rapid Japanese advance in the Pacific. The accomplishment of this task required the military occupation of numerous widely separated tropical islands throughout a vast subequatorial region and involved the establishment of bases on islands known to be hyperendemic foci of disease. There followed, as a consequence, a series of outbreaks of tropical diseases in epidemic proportions of a magnitude and potential threat seldom if ever exceeded in American military history.

Many factors contrived to create a situation which would favor a wide-scale outbreak of disease in the very early phases of the Pacific campaign. The initial occupation, of necessity, took place with a haste which did not permit carefully considered plans of disease prevention. The newly occupied islands were known to be endemic centers of an impressive array of threatening diseases, such as malaria, dengue, dysentery, scrub typhus, yaws, filariasis, tuberculosis and leprosy. Many of these, unfortunately, were diseases presenting prob-

lems of prevention with which most medical officers were almost totally unfamiliar. In addition, in certain instances, intelligent prevention was impossible, for the mechanism of transmission was not known to medical science. Most of the diseases were epidemic in nature. They could be expected to disable large numbers of men under conditions of combat and at the very time in which control would be most difficult. Further jeopardizing disease control at first was the underlying situation, in which almost the total efforts of the newly occupying forces had to be directed toward even more urgent matters, such as obtaining food and ammunition and of digging in to fight the enemy.

A consequence of this situation was that in the early phases of the war almost all troops based in the Pacific suffered from one or more epidemic diseases. The lessons learned from these early experiences, however, were not unheeded. The end result was that, in spite of all the obstacles faced, epidemic diseases soon came under control. It is believed that history will in time show that Allied successes in disease control so greatly exceeded those of the Japanese that a major advantage in the war was thereby gained.

At present only some of the highlights of the story of the various epidemic diseases which occurred can be told. This report, in particular, encompasses only the epidemic disease experience in the South Pacific Command Area. This included New Caledonia, the New Hebrides, the Solomons, the Fiji Islands and the Ellice, Samoan and Tonga Island groups.

The epidemic diseases of most significance which plagued troops were, roughly, in order of importance malaria, dysenteries, dengue, Bancroft's filariasis, scrub typhus and infectious hepatitis. Dysentery was encountered throughout all the island groups. Dengue was widespread but was characterized by distinct, focal outbreaks. Filariasis, caused by *Wuchereria bancrofti*, appeared in epidemic form in troops for the first time in history. It occurred in significant numbers only in the Samoan and adjacent islands despite the existence of the disease in natives in almost all the island groups under consideration. Scrub typhus was confined to relatively few cases reported from New Georgia and Bougainville. Infectious hepatitis appeared with spotty geographic distribution.

MALARIA

In importance, malaria far exceeded that of any other of the epidemic diseases. The large number of individuals contracting this disease resulted from the fact that the major military engagements were fought on some of the most highly malarious islands in the world.

That the rather remarkable limitation of endemic malarious areas in the South Pacific fortunately spared many island groups the burden of malaria prevention is important to bear in mind.

The most instructive experience in the problem of malaria is the situation which occurred on one of the first occupied malarious bases in the early spring of 1942. With the unstemmed advance of the Japanese apparently greatly menacing this occupation, a rather hopelessly small American force dug in for a bitter fight. What happened to this force so far as regard malaria serves as a classic example of what may be expected to occur when effective control is lacking.

All the elements which could predispose to a serious malaria situation participated. The site chosen for bivouac areas and military activities was one well known by the residents of the island to be the most malarious spot of the entire island. Into this area of

Commander Saperio was malaria and epidemic disease control officer, South Pacific area, for period June 1942 January 1944.

Lieutenant Commander Butler was assistant malaria and epidemic disease control officer, South Pacific area, for period July 1943 January 1944, and malaria and epidemic disease control officer, South Pacific area, for period January 1944-June 1944.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writers and are not to be considered as reflecting the policies of the Navy Department.

dense anopheline population over 500 malarious natives were also brought to provide manual labor. These natives, in close contact with the troops, constituted, as was later shown, a malaria reservoir infective to an extraordinarily high degree. Bed nets were at first not available and few other individual protective measures, which we now know to be so important, were placed in effect. Drugs for suppressive treatment had not been brought along.

While the resultant severe epidemic was in full force, new units arrived, and active methods to stop the epidemic were attempted. Again, unfortunately, the methods employed were not those which would be promising. The principle of control adopted was drainage or treatment of any observable water surface. There was no entomologist in the group to point out the essential fact that control could follow only when the anopheline's habitat was known. Thus a campaign of quartering, raking and burning of coconut half shells, a task of gigantic proportions, was undertaken, though later it was shown that the anopheline malaria vector rarely, if ever, bred in coconut half shells. Drainage of a small swamp was attempted, though again a survey at a later date showed that anophelines were not breeding in this swamp. Nearby, a small innocuous looking stream had been overlooked. Subsequent entomologic observations showed this small stream to be the anopheline reservoir for the entire valley.

In retrospect and in the light of our present knowledge, these mistakes may seem extraordinary. The fact remains, however, that this small heroic group, unaided and faced with every conceivable obstacle, was the first of American forces to face the malaria problem in the Pacific. Prior to arrival they had not even the advantage of knowing that they were going to a malarious island. Any criticism one might want to make of these pioneer experiences could be made only by those ignorant of all the facts. Their early mistakes were soon recognized, and the lessons learned provided basic knowledge by which a brilliant achievement in malaria control followed. Details of the corrective measures which were applied have been described by Butler.¹

In contrast to the near disastrous situation on the first malarious occupied island was that which occurred at the next base occupied by military forces. The commanding officer of this base had from the first the advice of a group of trained personnel regarding the pattern of the disease methods of prevention. Equally important, this command consistently followed the recommendations which were made. One of the most spectacular achievements of the malaria control group was convincing the high command that use of imported native laborers (the major cause of the epidemic on the first occupied island) would cause a far greater loss of man hours in troops due to malaria than could be gained by the presence of natives. As a result, on this base malaria never became a major military threat. The low rates achieved, in contrast to the earlier experience, should go down in the history of preventive medicine as a classic example of what may be accomplished in disease prevention. That the extremely low prevalence of malaria did not follow because of the island's being naturally less malarious has been repeatedly demonstrated. Troops maneuvering just outside the controlled, occupied area of this island have consistently encountered malaria in serious proportions.

The value of citing these experiences is obvious. They demonstrate that malaria in this part of the world, in the absence of proper preparation and knowledge of control, may neutralize a military force with much more rapidity than the Japs themselves ordinarily could hope to accomplish. Similarly, they demonstrate the converse: that malaria can be effectively controlled even in hyperendemic areas under conditions of warfare if properly approached. They bring to light the essential fact that to attain the control of malaria it is essential that the problem be given the full time attention of well qualified specialists. They demonstrate with great clarity the additional necessity of training and education of both medical and line officers to recognize this need of control. Of equal importance is the need of a keen understanding by doctor, line officer and enlisted man concerning the role of each in measures of prevention to be taken by the individual. These measures concern the regular use of bed nets, the wearing of proper protective clothing and all the other preventive methods effective only when it is the will of an individual to utilize such protection. This is a matter of "malaria discipline," in which it is the duty of medical officers to point out all available protective measures and the responsibility of unit commanders to see that the recommended precautions are universally applied.

Subsequent experiences with malaria were largely under conditions of very active combat. The next landing took place in the face of very active enemy opposition. Fortunately it was the time of the dry season, and the first cases of malaria did not appear in numbers until approximately five weeks later. This landing under combat was followed by a repetition of many of the same mistakes that were made in the first landings on malarious islands under noncombatant conditions. The outbreak threatened to become the critical factor in the success of the operation, and the military situation was probably saved by the use of atabrine.

This drug received its first and most extensive early trial in the South Pacific. Its toxicity at the time was unknown, nor could it be predicted to what extent it would fulfil its function of suppressing clinical malaria. Important lessons were soon learned. First, the drug was apparently safe to use. Secondly, while it would prevent clinical malaria when used in proper dosage, eventually there came a time when the drug had to be or was stopped in many troops. At this time the price of employing a suppressive drug instead of true preventives became evident. Benign tertian or vivax infections became clinically active following the termination of suppression which was ordered when combat activities were no longer essential. Another serious drawback in the use of the drug was that, in suppressing clinical malaria, it tended to give military commanders a sense of false security. This in turn in some cases led to neglect or delay in developing true preventive measures such as anopheles mosquito elimination, screening and individual protective measures against mosquito bites. However, the enormous benefits of the drug outweighed such considerations, and a policy of continuing all heavily infected troops on atabrine suppression while overseas has been adopted.

It is not possible to present at length the various methods which were necessary and which were introduced to meet the problems faced in the control of malaria under combat. Control and elimination of anopheles breeding areas has been developed to an amazing extent and efficient insecticides, repellents and other devices for individual and group protection have

1. Butler, F. A.: Malaria Control Program on a South Pacific Base. U. S. Nav. M. Bull. 41: 1603-1612 (Nov.) 1943.

among troops in the South Pacific area in December 1942 and during the first six months of 1943.

Many of the cases came from Guadalcanal at a period when combat fatigue and exhaustion were more pronounced than at any other time during hostilities. They tended to come down at the same time and to come from the same units. There seemed to be no correlation with a history of yellow fever vaccination. The disease finally died out and, while a few sporadic cases appeared subsequently, the numbers never reached the proportions of the original epidemic.

The second disease worthy of mention, scrub typhus, or tsutsugamushi disease, appeared in only small numbers of South Pacific troops. The few cases came from the islands of New Georgia and Bougainville. On the latter island the disease was largely confined to men who had made patrols through recently occupied Jap bivouac areas. Scrub typhus in the early phases was thus numerically of little importance.

COMMUNITY HEALTH EDUCATION BY THE MEDICAL PROFESSION

FROM MEDICINE SHOW TO HEALTH MUSEUM

BRUNO GEBHARD, M.D.

Director, Cleveland Health Museum
CLEVELAND

"Physicians as good citizens and because their professional training especially qualifies them to render this service should give advice concerning the public health of the community." So states chapter IV of the Principles of Medical Ethics of the American Medical Association. How can the physicians do their share in giving such advice? In the line of personal health the good physician has done it, all the time being aware that the original meaning of the word doctor is "teacher." In our days preventive medicine is gaining more and more ground. There will still be enough to do in the line of curative medicine—as the poor, the sick ones will always be with us. But preventive medicine has demonstrated that less sickness is possible, that diseases can be prevented, that life can be prolonged, that health for the millions can be improved. Interest in public health has enormously increased among the general public. Discussions on the administration of medical care and medical insurance are the topics of the day. We cannot complain that the present generation is not interested in the affairs of personal and public health. The increasing number of books, magazines articles and films, even before the war, demonstrated this interest and, as usual, the war has increased it. Health education in schools and for adults has become an accepted responsibility of official and voluntary health agencies, but especially of the medical profession. Those who are still doubting Thomases might be referred to Dr. W. W. Bauer's article on health education in "Administrative Medicine."¹ Here he answers the question "Is health education necessary?" discusses the old misunderstanding that health education encourages self diagnosis and self treatment and countercharges the opinion that health education stimulates hypochondriac tendencies and tends to create abnormal fears. Where health edu-

cation is done wrongly or insufficiently it usually has its reason in only sporadic or badly organized efforts of our own groups. As Charles H. Mayo said, "I believe the doctors are always at fault when the public does not understand them." The American Medical Association has a great share in lay health education. In 1911 it established the Council on Health and Public Instruction, issued a handbook for health speakers in 1919 and has published *Hygeia* since 1923.

In awareness of the platform of the American Medical Association advocating "the principle that the care of the public health and the provision of the medical service to the sick is primarily a local responsibility," the Cleveland Academy of Medicine started out in 1936 with a new approach to community health education. In close cooperation with the Cleveland Health Council twenty-two civic bodies, including museums, colleges, schools and the newspapers, were invited to study the advisability "of establishing a permanent museum of health and hygiene where scientifically prepared material of a visual nature might be made available to the public at all times."

On Dec. 28, 1936 the Cleveland Museum of Health and Hygiene was incorporated, not for profit, under the laws of the state of Ohio. Out of practical reasons we are referring to it now as the "Cleveland Health Museum." The Cleveland Dental Society and the Academy of Medicine organized a membership drive under their own members. After securing about 600 prospective members who were willing to pay annual membership dues of at least \$10 but not until "the museum's trustees had declared that sufficient funds had been pledged or paid to guarantee successful operation," lay individuals of the community were approached for financial support. A suitable site was donated by Mrs. E. S. Prentiss, who also made funds available to transform the old mansion at 8811 Euclid Avenue into a modern museum.

Health museums are distinctly different from medical museums. The emphasis in medical museums is on professional training; health museums are for lay education. Medical museums feature disease; health museums aim at better health for more people understanding health at being physically and mentally "at-ease."

There are disadvantages in using the word "museum," which for so many people sounds so like "mausoleum." On the other hand, museums are recognized as places where one can get unbiased information, where nobody tries to sell anything other than the truth and as places where there is something to look at. Museums, like all health exhibits, have special advantages. The late Evert G. Rontzahn in "The A B C of Exhibit Planning," 1918, thus summarized these advantages: "Exhibits attract attention of people who would not go to a lecture or read a pamphlet or listen to a health broadcast. . . . Exhibits are quick methods of presenting a new subject or an old subject in a new form. . . . Exhibits appeal to all sorts of men, to those who read editorials as well as to those who get no further than the baseball news."

The power of visual impression has been stated best by Tennyson in Enoch Arden: "Things seen are mightier than things heard."

A museum makes people come, stop, look, listen and, last but not least, it makes them better remember what they have learned when the occasion comes for practical application.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1. Emerson, Haven, editor: *Administrative Medicine*. New York, Thomas Nelson & Sons, 1941.

There is also no doubt that the pure existence of such an institution is a continuous admonition of the importance of health. There will always be many people who will never come inside a museum, but those we try to reach through our neighborhood and traveling exhibits, in lobbies of banks and colleges, in settlement houses and fairs, in war plants and in department stores. The organization of a museum has also the advantage of making new financial sources available for health education. As all members of the community are benefiting by improving the health status, many are willing to participate in the financing of such a museum. In the four years of our operations about \$110,000 has been made available through the generosity of approximately 900 interested persons. The museum has just received its first endowment in the amount of approximately \$400,000.

Being a museum does not mean that we restrict ourselves to the visual means as exhibits and films; all other mediums and methods of health education are used, and always organized medicine takes the responsibility for accuracy of presentation. For more than two years a weekly fifteen minute radio program has been conducted, mostly in interview form. A Sunday health column in a newspaper used material prepared by local medical and dental members until the paper shortage forced us to stop. Every year during the hay fever season a pollen count is published in all papers and mentioned on the news broadcasts of all radio stations. We are doing this not only for the benefit of the sneezers but to make the community conscious about air pollution in general.

A health museum is an ideal place to bring different groups in contact with health problems. It is obvious why Red Cross classes in first aid, nutrition and home nursing use the museum. Last year we had 520 groups, most of them adults, averaging 20 persons, and close to 300 were Red Cross groups. Other groups varied from provisional members of the Junior League to students of theology from a nearby college; from chiropodists to students of a school of embalming; from the Slovak Literary Society to the School for the Deaf. All medical, dental and nursing students from Western Reserve University have a visit to the museum included in their field trips. The medical students hear, in addition, a lecture on "The Physician as Health Educator," and they have to write a critical report which is graded. Doctors and dentists send, from time to time, specially printed invitation cards included with their monthly statements to their patients asking them to visit the museum. (By the way, our telephone number is easy to remember for our professional friends—Randolph 0606.)

We enjoy close cooperation with the health education activities of the American Medical Association. Many of their loan exhibits are on display, and nearly 2,000 written inquiries from our question box have been answered through the courtesy of the Health Education Bureau of the A. M. A. This activity should not be underestimated: it is a highly individualized form of health education, as great care is taken in answering these letters. Olesen² states the problem that "for some mysterious reason patients either ignore or hesitate to ask questions of their attending physician. In their turn medical attendants somewhat similarly fail to meet the quite reasonable question of their patients with frank, truthful and effective replies." Our experience has shown again and again that people feel their

question is not important enough to bother a physician or they do not want to reveal their ignorance to him. Sometimes, but rarely, they try to check up on the advice of their own physician.

An important activity is the classes for expectant mothers and the so-called prospective fathers, held twice weekly at the museum under the auspices of the Cleveland Child Health Association. Admission to these classes is possible only by reference from a practicing physician.

Our emphasis on lay education does not allow us to overlook the necessity for professional training. The museum offers a one to three months internship in health education. Thirty-two persons, including one from Mexico, one from Chile and one from China, took advantage of this opportunity. In 1943 we conducted a four week summer course for the graduate students of public health of the University of North Carolina. We are also anxious to train museum technicians, making our workshops available for the rehabilitation of returned handicapped soldiers.

One of the main considerations in establishing a health museum was the creation of visual teaching aids. Before the war such material was mostly imported, strangely enough, from Germany and Japan. There is no reason why this country cannot provide its own material if provisions are made for securing the necessary staff of technicians and proper methods of distribution of visual teaching material. We started in 1940 our own workshops with one artist, one technician and three WPA artists. Today our workshop activities have grown so that our duplicate traveling exhibit "Food for Health" has been shown in about thirty-six communities in fourteen different states. A Spanish edition was constructed for the Mexican government, and the Army Air Force used the exhibits in its educational program at Wright Field, Dayton, Ohio.

Regarding our own exhibits, we have divided them between two floors; the first floor deals with exhibits strictly on human biology under the titles "Man—Wonder of Life," "Man's Hand," "Man's Heart" and "Man's Head." Great care has been taken to display everything in a pleasant manner. Our second floor deals with maternal, child and dental health and with nutrition. One room is set aside for the "special exhibit of the month." No museum would be big enough to cover all the important items of personal and public health at the same time. We have therefore a new exhibit every month going with the calendar, as Health in the Summer, or with the many campaigns. During the Christmas Seal sale we have an exhibit on tuberculosis; during the March of Dimes, on infantile paralysis; in April, on cancer, for example.

We take great care in presenting the findings of medical science but avoid anything that, to a critical lay visitor, would make the museum appear as an advertising agency for the medical profession. Frankly, we have so much respect for the intelligence of our visitors—and perhaps for the effectiveness of our exhibits—that we hope the desired result of better appreciating the work of the physician will be achieved in a more indirect way.

Regarding exhibits technic, we are proud that no signs can be found which read "Please do not touch." On the contrary, we prefer three dimensional, animated exhibits with visitor's participation, popularly referred to as "push-button exhibits." The original cost of our exhibits, not including the Transparent Man, which is a loan from the American Museum of Health, is not

2. Pub. Health Rep., May 8, 1942.

more than the production cost of a good sound motion picture of twenty minutes showing time.

Four years is too short a time to evaluate our activities. We can say only that in spite of transportation difficulties we have a still increasing attendance. Last year we had about 30,000 at the museum, and approximately 750,000 saw our traveling exhibits. Requests for loan material reach us on such a scale that it will soon become impossible to grant such requests if we do not receive help from national agencies.

Practicing physicians work under great strain these days, but one should not overlook the fact that in wartime social changes on the home front occur quicker and oftener. Increased activities in health education help to win the war too. State and county medical societies might reevaluate their health education activities and study the possibilities of establishing a health museum of their own. It is a long way from the commercialized "medicine show" to the educational health museum. That it can be done and that it works has been demonstrated in Cleveland.

8811 Euclid Avenue.

ABSTRACT OF DISCUSSION

DR. W. W. BAUER, Chicago: Most people are visually minded, and therefore a picture is worth a great many words. I think the salient points about the Cleveland Health Museum are several: It is fortunate to have had a generous patroness who gave, first, the museum property, then the means for converting it into a museum and then a liberal endowment, and who also went one step further and created an incentive for good work in health education everywhere by establishing an award which is to be made annually by a committee. It is called the Prentiss Award, and it is to be awarded to health educators who have created outstanding records in health education. I think we should all be proud, as physicians, that the medical profession, through the Cleveland Academy of Medicine, has taken this leadership in health education in Cleveland. Those of us in other communities may well go back inspired to have the medical profession in those communities do likewise, because I think we are faced with the fact that, unless the medical profession seizes and exercises the leadership that rightfully belongs to it, that leadership will pass into other and less capable hands. The Cleveland Health Museum has the advantage of being a museum, not a mausoleum where dead ideas are embalmed. The Museum is distinctly alive. There are many occasions when you can go to Cleveland and meet the Cleveland Health Museum on the street, without going to 8811 Euclid Avenue, as a result of outdoor exhibits. The large number of groups that have come to visit the Museum, the diversification from exhibits and slides and films into the fields of radio and newspaper publicity, and the gearing of the Museum to the needs of the community, are all significant reasons why in four short years Cleveland Health Museum has become an institution that I am firmly convinced that community would be most unwilling to do without. Not content with being a Cleveland institution, it has become of nationwide significance because its exhibits have been used elsewhere, and because it has furnished a workshop, a laboratory, for the development of techniques in visual education. Every community of any size at all should look forward to having a health museum of some kind. This is not the first effort in the United States to establish health museums. There was one established twenty years ago or more by a young woman whose name unfortunately escapes me, but it was in one of New York's slum areas, where she had taken a typical tenement and left half of it in exactly the condition in which she found it, deplorable in every respect, but she had taken the other half of it and converted it at small expense in money, but with considerable ingenuity, into what such a tenement might have been. That was an early effort at museum in this country.

DR. CHARLES V. CRASTER, Newark, N. J.: I should like to ask Dr. Gebhard what the annual attendance is and what procedure they take to get people in to see the exhibits. It seems to be a fine idea and one particularly good for a city with a large industrial population.

MR. HOMER CALVER, New York: I should like to emphasize the great difference between a health museum and a medical museum. A medical museum, in which the exhibits are designed for the understanding and education of the medical student or the practitioner, must present its material in scientific terms and in such detail that it is not only boring, but unintelligible to the layman. In a health museum no attempt is made to make the message encyclopedic. There is a conscious effort to reduce the text to a minimum and to avoid everything but the simplest terms. I have studied health exhibits in several countries for a number of years, but I have found no successful combination of those two objectives. If you attempt to create a popular museum and a medical museum at the same time, the result is bound to be something which is over the heads of laymen and beneath the interest of the scientist. The other point I should like to comment on is the growing development of medical and public health exhibits in science museums. A public health section in a museum of science or in a museum of natural history is not a substitute for a health museum. Dr. Gebhard pointed out that they had attendance at his museum of about 30,000 people a year. But this figure fails to represent the full measure of the program. Even the 75,000 additional contacts outside the museum through the traveling exhibits doesn't completely represent the scope of a museum such as they have in Cleveland. That institution, which is tied in with the Cleveland Health Council, is a vital, active, community center for health education—a constant, throbbing center, which day in and day out carries its message of hygiene and public health to the people. That type of community program is difficult to secure where you have only a health exhibit in another museum. So I would say to any of you who may see a spark of interest in your community for development of a museum of health that every effort should be made with the cooperation of the county medical society, the health department and the voluntary health agencies to secure a separate and distinct museum of health (even though it may be small) which is a vital center for community health education.

DR. BRUNO GEBHARD, Cleveland: I am afraid that a museum of our type, and sometimes we feel we haven't even arrived at the status of a museum—that an activity of our type cannot be measured by the attendance at the central office. As of today we have loan exhibits at the Ohio State Museum, in Omaha, the Gas and Electric Company, in Oregon and in Buffalo. I don't know how many people go to see the exhibits there. In our own city it works this way: We are a member of the Health Council and we work more or less as a specialist branch in health education for all the other voluntary health agencies. For instance, the Anti-Tuberculosis League has a mass chest x-ray examination in war plants and two weeks later we move in with our exhibits on personal health and nutrition. Sometimes it is an exhibit on dental health. It is hard for us to measure our activity, and Mr. Calver is quite right: 30,000 people, our annual average might be low. Maybe we should have said 90,000, or 300,000 in a year. We don't know how good or how bad we are. Regarding the question how we get people to come to a health museum: I think we don't realize that the need for understandable information on the part of the general public is enormous. Out of our own self protection and not to kid ourselves, we have done nothing in organizing our attempts. We have never organized visits by school classes. They come on the initiative of the individual class room teacher. We have never invited any adult groups to see us. It depends more or less, as most of those things depend, on word of mouth propaganda. We have done the usual things, street car signs and a weekly calendar in the Sunday newspapers telling what is going on. We realize that public relations are nothing else than really good personal service, and if you give that to your community you will have good attendance at your museum.

THE PROBLEMS OF CANCER
BIOLOGY

R. R. SPENCER, M.D.

Chief, National Cancer Institute, National Institute of Health,
United States Public Health Service

BETHESDA, MD.

No human malady today is of greater interest to the biologist or of more concern to the public than is cancer. The appeal to lay and professional minds alike is due not only to the manifold problems involved in the prevention, control and therapy of cancer but also to the much publicized behavior of cancer cells as a ruthless group of gangsters running amuck among the orderly functioning tissues of the human economy. In the light of our present knowledge of the cancer process, this analogy is useful and not altogether inaccurate since the human gangster and the cell gangster do have something in common. Both arise as a rule under unfavorable environments.

Unquestionably, cancer has biologic attributes that set it apart from all other forms of maladjustment. It is my purpose first to set forth some of these attributes, which, I believe, give cancer research an advantageous position in experimental biology and medicine, then to outline briefly what is now being done and finally to suggest the probable plans of attack on this admittedly major health problem.

MULTIPLICITY, SPECIFICITY AND NONSPECIFICITY
OF INCITING AGENTS

No other form of human maladjustment on the physical level has such a large number and variety of inciting agents. Excluding from consideration the well established part played by x-rays, gamma rays and ultraviolet rays in the genesis of cancer, Hartwell of the National Cancer Institute has published a survey of the literature on those substances that had been tested for carcinogenic activity.¹ Data were collected on 696 different chemicals, organic and inorganic, 169 of which were reported to be carcinogenic. By including the literature since the publication of his bulletin three years ago, Hartwell has now found a total of 1,028 compounds which have been tested for carcinogenic potency and of which 284 were reported to be active.

Indeed, every cancer investigator has been impressed with the fact that active carcinogenic compounds are found in a variety of chemical classes, that substances of widely different chemical structure possess carcinogenic activity and that among substances of the closest chemical similarity one may be active and another completely inactive. To date, no invariable correlation has been discovered between molecular structure and carcinogenic activity. The carcinogenicity of a substance is known to be influenced by many factors, including the species and the genetic constitution of the experimental animals employed, the age, the sex, the diet, the physical condition of the animal, the purity of the chemical compound, the dose, the physical state of the compound, the nature of the solvent or vehicle used in administration, and the route or site of application. The value of any experimental result is dependent on the number and kind of animals used, the survival rate and the duration of the experiment. These observations seem to suggest that, although the mechanism involved in the genesis of

cancer may have a basic pattern common to all cancers, the conditions are seldom exactly the same in the development of any two.

It should also be remembered that cancer in human beings is an environmental and occupational disease to a considerable extent. Modern industry has created for man a new and artificial environment, which has brought with it a large number of industrial and environmental hazards affecting nearly every organ of the human body. Industrial medicine, aviation medicine and radiology are products of the modern era. Hueper,² who has reviewed the literature of industrial cancer, states that:

Occupational cancers are elicited by a great variety of chemical and physical agents, such as arsenic, chromates, nickel carbonyl, radium, mesothorium, asbestos, crude mineral oil, pitch, tar, soot, paraffin oil, anthracene oil, creosote, aromatic amino compounds such as aniline, naphthylamine and benzidine, benzol, ultraviolet rays, roentgen rays and rays of radioactive substances and certain parasitic worms. . . . Habits too are responsible for cancer of the mouth, lips and cheeks in tobacco smokers and betel nut chewers, for cancer of the skin of the abdominal region in carriers of certain heating appliances in Kashmir or in Japan.

The carcinogenicity of some of these substances may be questioned.

However, cancer research has by no means fully explored the great variety of environmental and occupational health hazards to which the increasing complexity of modern life exposes us. Very likely more of these will be found as factors in the genesis of cancer. The continued increase in cancer prevalence during the past three or four decades cannot be accounted for solely on the basis of better recognition of the disease, on improved diagnostic methods or on the fact that there are more people living now to the cancer age. Cancer following x-ray burns, for instance, could not have existed prior to the discovery and use of these rays. The same may be said about cases of occupational osteosarcomas in watch dial painters, caused by the ingestion of infinitesimal amounts of radium. Still another relatively new type of industrial cancer is that occurring in dye workers due to a specific compound (betanaphthylamine) and affecting a specific tissue only, the epithelium of the urinary bladder. Cancer of the lung also has been shown to be increasing over a number of years. Is this due to city soot or to exhaust gases from automobiles, or both, or to some other agent? Seelig and Benignus³ of the Barnard Free Skin and Cancer Hospital experimented with soot from the chimney of a furnace burning bituminous coal. The soot was used as bedding for mice of the Buffalo strain. Primary tumors of the lung were obtained in 8 of the 100 test mice as compared with 1 of the 50 control mice. (This work confirmed some earlier experiments of Passey.⁴)

Shimkin and Leiter⁵ of the National Cancer Institute extracted tar from chimney soot and injected it subcutaneously into mice. Sarcomas were obtained in about half the animals. Leiter, Shimkin and Shear⁶ later tested tars extracted from atmospheric dust with benzene and with ethyl ether and produced sarcomas at the site of injection in 18 of 291 mice (C3H strain) in twelve months.

2. Hueper, W. C.: *Bull. Am. Soc. Control Cancer* 25: 63-69 (June) 1943.

3. Seelig, M. G., and Benignus, E. L.: *Am. J. Cancer* 34: 391-398, 1938.

4. Passey, R. D.: *Brit. M. J.* 2: 1112, 1922.

5. Shimkin, M. B., and Leiter, J.: *J. Nat. Cancer Inst.* 1: 241-254, 1940.

6. Leiter, J.; Shimkin, M. B., and Shear, M. J.: *J. Nat. Cancer Inst.* 3: 155-165, 1942.

Nettleship and Henshaw,⁷ also of the National Cancer Institute; showed that intraperitoneal injections of minimal anesthetizing doses of urethane (ethyl carbamate) repeated at weekly intervals increased the incidence of lung tumors in C3H mice from less than 5 to more than 75 per cent. Urethane is chemically related to the barbiturates, which are widely used as soporifics. Some of the latter are now being tested on mice for carcinogenic effect; but even if they are found active, one cannot assume without more direct evidence that these drugs are factors in the genesis of cancer of the human lung.

Nevertheless it may be safely stated that in no other form of human maladjustment can one demonstrate such a multiplicity of exogenous inciting agents. Some of these agents (chemical and physical) are capable of inducing the cancer process in widely different species and in different tissues of the same species. Roentgen rays, gamma rays of radium, methylcholanthrene and benzpyrene belong to this group and are considered as highly potent carcinogens. Others, such as estrone, beta-naphthylamine and *p*-dimethylaminoazobenzene, are more selective. They affect certain specific tissues primarily and only rarely cause cancer in other organs. Nothing has ever been found which has given even a hint as to how the carcinogenic process once started may be stopped or reversed. Complete destruction of all cancer cells is at present the only known method of effecting a permanent cure of cancer. Methods of prevention seem more hopeful. Whenever a new exogenous cancer inciting agent is discovered, the knowledge provides us at once with the means of developing practical protection against this particular agent. Therefore all cancers induced by exogenous agents belong definitely in the category of preventable diseases. In this connection Kennaway⁸ has recently presented data which suggest to him that the very high incidence of primary cancer of the liver found among Negroes in Africa does not appear among Negroes in the United States and is therefore not of an entirely racial character. Hence he believes that the prevalence of this form of cancer in Africa may be due to some extrinsic factor which could be identified.

Unfortunately, the high death rate from cancer is not ascribable to cancers of exogenous origin but rather to those of endogenous origin. Clinical and experimental evidence suggests that the majority of such cancers are induced by unusual and, for the most part, long standing internal environmental and biochemical imbalances. According to the 1942 census reports, cancer of the digestive organs and peritoneum not including the oral cavity accounted for 45.7 per cent of all deaths from cancer. Cancer of the breast and of the female generative tract accounted for 43 per cent of all deaths from cancer among women. Certain of these internal cancers, now thought to be due largely to endogenous conditions, may be shown later to have extrinsic etiologic factors, such as Kennaway's suggestion for cancer of the liver among Negroes.

Of the endogenous cancers, none has received greater attention experimentally than has cancer of the breast. It is now well established that the genesis of cancer of the breast in mice involves interaction among at least three factors: (1) the genetic constitution, or the hereditary susceptibility, (2) the presence of the female hormone estrone and (3) the presence of the so-called mammary

tumor inciter or "milk factor." This last mentioned factor is a labile, antigenic filtrable agent-transmissible from mother to offspring through nursing. Of course, it cannot be stated that human breast cancer is dependent on a similar set of conditions. Yet on the basis of our knowledge of breast cancer in mice at least one investigator recently advocated "that the women of families with any malignant tumors in their ancestry refrain entirely from nursing their progeny." "Artificial feeding," he advises, "should be substituted from birth for at least one generation."⁹ There is, however, considerable doubt on the part of many that such advice is warranted at this time. (The idea was first suggested by Bittner,¹⁰ who discovered the milk factor in mice.)

It may now be safely stated that at least some cancers of endogenous origin are the resultant of a complicated set of internal factors, genetic, hormonal and biochemical. However, the factors responsible for cancer of the breast may not necessarily bear any relationship to the biochemical conditions responsible for cancer of the stomach, liver, lung, prostate or other tissues. By the same token it is apparent that a diagnostic test for cancer in one organ or tissue is not likely to be effective in detecting cancer in another organ or tissue. To be useful, a diagnostic test should detect the disease in its early stages in all locations.

CANCER AS A SURVIVAL PROCESS

For the sake of clarity and for the convenience of the investigators, the causation of cancer was divided by Ewing into two parts: (1) the causal genesis of tumors, including the inciting agents leading up to the development of malignancy, and (2) the formal genesis, or the factors responsible for the nature of the cancer cell and its tendency to unlimited multiplication. I have indicated that in the causal genesis sufficient data have accumulated to make it clear that there are multiple and diverse causal conditions which probably vary for each type of cancer. This diversity of inciting causes is so apparent that some investigators consider the different types of cancer as representing different diseases.

On the other hand, the formal genesis is concerned with the nature of the cancer cell or the changes in the cell responsible for the malignant state, which changes are thought to be essentially the same regardless of the diversity of causes or the tissue of origin. The diverse inciting agents play no part in the continuation of malignancy, nor is there any relationship between the nature of the agents and the degree of malignancy, the invasiveness of the cancer cells or the final outcome. While cancer, from the standpoint of inciting agents, may justly be regarded as a whole group of diseases, it is equally reasonable to consider it a single disease from the standpoint of the intracellular change which results in the malignant state. Although the mechanism of this change is unknown, it seems reasonable to believe, from clinical observations as well as from experimental evidence derived from the study of the metabolism and enzyme pattern of cancer tissue, that the nature of the transformation from normal to cancer cells may be essentially the same in all tissues. These considerations suggest that cancer is the result of a special type of cellular adaptation which can be distinguished from other forms of maladjustment, especially from those diseases caused by specific parasites.

7. Nettleship, A., and Henshaw, P. S.: *J. Nat. Cancer Inst.* 4: 309-319, 1943.
8. Kennaway, E. L.: *Cancer Research* 4: 571-577 (Sept.) 1944.

9. Gross, L.: *Cancer Research* 4: 293-303 (May) 1944.
10. Bittner, J. J.: *Tr. and Studies, Coll. Physicians, Philadelphia* 9: 129-145, 1941.

Every one recognizes that all diseases may be considered as manifestations of cellular reactions to unusual external and internal environmental conditions. Therefore cancer necessarily falls into the same category; but there is a difference in the cancer process, which should be emphasized. In communicable diseases one observes a process of adaptation between two living variables, the mammalian cell host and the invasive parasitic agent (virus, bacteria, protozoa). In hormonal diseases (diabetes, hyperthyroidism, gigantism, Addison's disease and other diseases) and in the various avitaminoses (scurvy, pellagra, ricketts, beriberi and so on), as well as in those conditions caused by hereditary or genetic defects (hemophilia, xeroderma pigmentosa, Huntington's chorea and others) one observes conditions or processes resulting from the efforts of the organism to survive hormonal, nutritional and developmental imbalances.

In cancer too we are observing unquestionably a movement toward that universal goal of all living things, survival. In the communicable diseases the struggle for survival may end in the death of the host, the death of the parasite, the death of both or a compromise by which both host and parasite live together in symbiosis. The removal of the inciting cause in such diseases results in the restoration of normal cell states. In cancer, by contrast, the local surviving cells do not assume their normal function following continued injury but take on the properties of malignancy and become parasitic. The intracellular change culminating in cancer usually represents a process which requires a long period of time. The very shortest recorded period between the injection of a powerful carcinogenic agent in animals and the first appearance of malignant tumors was twenty-five days.¹¹ Furthermore, the pathologist can detect no discontinuity between the precancerous and the cancerous process. Even the parasitic diseases, when chronic, are thought by some to serve as carcinogenic agents. Interval exposures of experimental animals to very small doses of carcinogens have been shown to be more effective in the induction of cancers than have single large doses.¹² That the cancer cell is the result of a process of adaptation is also suggested by various observations indicating that cancer cells are tougher and have greater survival value than have the homologous normal cells.¹³ In transplantation experiments, cancer implants are seen to elicit a greater vascular bed from the host than is found following implantation of normal tissue and to assume a rate of multiplication superior to surrounding normal tissue. It is a common clinical observation that cancer tissue in the terminal stages will continue to grow and increase in weight while the rest of the body rapidly loses weight.

This concept of cancer as a manifestation of a special type of cellular adjustment (or maladjustment, according to one's frame of reference¹⁴) is set forth here because it seems to be a safe and sound, although perhaps a somewhat obvious, biologic generalization, but it serves well as an advantageous point of view from which future attacks on the cancer problem may proceed.

As far back as 1929 Ewing¹⁵ said:

We have no satisfactory proof of the nature of malignant proliferation of tissue cells. Neither have we any definite knowledge of the nature of normal growth; we merely have descriptive knowledge of the conditions under which it occurs. We know that the ovum, when fertilized, grows under certain conditions, but we do not know why it grows. I think, therefore, that the problem of the ultimate nature of the cancer process is one of those types of information which will long escape the human mind. In the present state of science, I think it is unsolvable.

We need not be quite so pessimistic today, although we believe the majority of cancer investigators feel that the carcinogenic change is related to certain fundamental life processes, (1) growth, (2) organization, (3) differentiation, (4) mutation and (5) the aging process. It has been pointed out that the same physical agents (x-rays, ultraviolet light and gamma rays of radium) that are known to increase the occurrence of biologic mutations in suitable laboratory animals will also induce cancers in animals and human beings.

On the other hand, it is only fair to state that others, especially those who advocate the virus origin of cancer, see no need to postulate a permanent and fundamental cell change as the central characteristic of the cancer cell. Rous¹⁶ in the fourth Barnard Hospital lecture said:

All in all it now seems superfluous and a bit grandiose to assume, as has been easy in the past, that the cause for the cancerous process is a secret bound up with life itself. There is no need to suppose that tumor cells are the outcome of some inherent, fundamental cell change, though this is a favorite supposition.

The term "virus" has been used to designate many different agents. It is used here in the sense of an extraneous, autonomous, invasive, filtrable, parasitic agent of submicroscopic size. If cancer is due to a virus, as here defined, we are forced to postulate an almost ubiquitous parasite or group of parasites of mammals which remain latent for the most part but which may be activated by a large number of agents or by certain disturbances of the normal biochemistry of the organism. A strikingly clearcut example of the experimental induction of cancer by the latter means is seen in the work of Woolley, Fekete and Little.¹⁷ They were able to show that a hormonal deficiency may set up internal environmental conditions which are unfavorable to the proper functioning of normal cells. When mice of the CE strain were gonadectomized at 2 days of age, carcinomas of the adrenal cortex developed. The frequency increased with age up to 1 year, when it reached 100 per cent. No such tumors were observed in normal male and female mice of the CE strain. In this instance the organism apparently is forced to adjust to a hormonal deficiency, the burden of which falls, it seems, on the cortical cells of the adrenals. The final result is cancer. A special type of adjustment: other mice strains gave hypertrophy—not cancer. When cancers are induced in this manner it does not appear necessary to assume that the activation of a latent virus is the essential factor, although it cannot be excluded completely. At any rate, no parasitic virus agent has yet been proved to be present in any mammalian cancer at all times. The work of Milford and Duran-Reynals¹⁸

15. Ewing, J.: *Pub. Health Rep.* 44: 2093-2101, 1929.

16. Rous, Peyton: *The Nearer Causes of Cancer*, J. A. M. A. 122: 573-581 (June 26) 1943.

17. Woolley, G. W.; Fekete, Elizabeth, and Little, C. C.: *Science* 97: 291, 1943.

18. Milford, J. J., and Duran-Reynals, F.: *Cancer Research* 3: 576-584, 1943.

11. Valade, J.: *Compt. rend. Acad. d. sc.* 204: 1281, 1937.

12. Cramer, W., and Stowell, R. E.: *Cancer Research* 3: 668-681, 1943.

13. Brues, A. M., and Jackson, E. B.: *Cancer Research* 1: 557-563, 1941.

14. A successful but temporary adjustment from the standpoint of the cancer cell, a maladjustment from the standpoint of the organism as a whole. The temporary adjustment can be made permanently successful for the cancer cell if man chooses to interfere by transferring the cancer cells from animal to animal indefinitely or by continuous in vitro cultivation, thus providing a suitable environment.

has shown that the same virus (Rous I) injected into chick embryos produces hemorrhagic lesions as a rule whereas in adult chickens it produces tumors. The type of lesion produced is dependent on the resistance of the host. Neoplasia results when the host is endowed with a certain resistance to the virus. Lower resistance results in destructive lesions.

The recent studies of Greenstein¹⁹ at the National Cancer Institute yield additional evidence regarding the special characteristics of cancer cells. He has shown that the enzymatic pattern among the cancers of any one species is uniform and is independent of both the etiology and the tissue of origin. In other words, his data suggest that, regardless of the inciting agents or the tissue of origin, cancers in a given species converge toward a common tissue type. Furthermore, the enzymatic pattern of a tumor tends to resemble that of the homologous embryonic tissue rather than that of the adult tissue of origin. Hence it is natural to ask whether or not cancers represent a reversion or a metabolic dedifferentiation. The tissues of benign tumors do not reveal this pattern, as far as tests have been carried.

While it is true that there is no single measurement of metabolic activity (oxygen consumption, carbon dioxide yield, anaerobic and aerobic glycolysis) characteristic of cancer cells, they possess, nevertheless, an overall pattern which also can be characterized as approaching a more primitive or embryonic type than that of the normal adult tissue. Hyperplasia of cells is observed in many noncancerous conditions, notably the infectious granulomas; but in such conditions either the host dies as a result of the infection or recovery results and all the infected cells assume normal functions. In contrast, the cancer victim succumbs not because of the activity of a demonstrable parasite but, as far as we know, death is due to excessive activity of the host's own cells.

There is more or less complete agreement that the genetic constitution of the host is a major factor in the genesis of all cancers. In no other condition does one find such a high degree of species and individual specificity. Highly inbred homozygous strains of experimental animals have long been essential tools in the study of cancer, for in such animals genetic variability is minimized, thus permitting the evaluation of the effects of nongenetic factors. Furthermore, by selecting and inbreeding the geneticist has succeeded in developing strains that have uniformly high incidences of various neoplasms such as mammary, lung, liver and even gastric tumors. Until recently, only in these homozygous strains could most tumors be maintained through transplantation, although now Greene²⁰ has developed a technique whereby he has been able so to adjust the cancer cells of one species that they grow readily in the body of a foreign species. Greene believes that the ability of cells to grow in another species may be used as a measure or criterion of their malignancy. He says "Malignancy transcends species specificity."

In concluding this brief discussion of the cancer cell, I believe that a statement made by Cowdry²¹ in 1940 is still valid. He said:

The types of malignant cells probably outnumber those of the normal cells from which they arise. To add together what are thought to be the outstanding features of all of them and to

construct a synthetic picture of what the cancer cell is like would be both unjustifiable and misleading. . . . Malignancy is a functional attribute. . . . There is no satisfactory evidence that malignant cells of man possess anything, virus or otherwise, which is wholly absent in normal cells.

According to Darlington,²²

There is nothing surprising in the fact that reproductive particles can suddenly appear in the cytoplasm by the action either of the mutafacient nucleus or of external carcinogens, nor again that such particles may either be transmissible or only transplantable.

The hypothetical "plasmagenes" as well as viruses are regarded by Darlington as cytoplasmic nucleoprotein determiners which may be stable and useful cell components in one genotype and act as destructive agents in another.

Claude²³ has pointed out that so far organic structures found to exhibit the property of self duplication have been shown to contain nucleic acid of the one type or the other, and Hargitt²⁴ feels justified in speculating that "substances containing nucleic acids or nucleoproteins are capable of reproducing themselves."

And so the search for the secret of the cancer cell must continue as one of the most important fields of experimental biology, a field which may not yield immediately a solution of the cancer problem but which will certainly add interesting and significant knowledge of living processes as by-products to our chief objective.

THE PRESENT STATUS OF CANCER CONTROL AND RESEARCH

In the United States four philanthropic foundations use their funds exclusively for the study of cancer. These foundations are (1) the Anna Fuller Fund, (2) the Finney-Howell Research Foundation, Inc., (3) the International Cancer Research Foundation and (4) the Jane Coffin Childs Memorial Fund for Medical Research. For more than thirty years the American Society for the Control of Cancer limited its activities largely to the dissemination of information about this disease. Now this organization has awakened to a fuller realization of its duties and responsibilities, has changed its name to the American Cancer Society and has launched a far broader and more ambitious program. Its new plans propose, in addition to lay and medical education, to render financial aid in support of the diagnosis and treatment of the cancer patient, to provide equipment and supplies for laboratories, clinics and hospitals, to house and care for the advanced cancer patient and to finance organized cancer research.

The University of Texas has set up at Houston a hospital for cancer research.

The University of Minnesota has established an Institute of Cancer Biology and is the first institution in the world to offer a doctorate in cancer biology.

Hahnemann Medical College in Philadelphia has a full time Department of Oncology and in this respect is unique among the medical schools of this country.

Cancer education is being extended to the curriculum of the public schools. In the summer of 1942 the New York Association of Biology Teachers adopted a new syllabus for the tenth year biology classes in schools throughout the city. For the first time the subject of cancer was included.

19. Greenstein, J. P.: Unpublished data, to appear in the *Journal of the National Cancer Institute*.

20. Greene, H. S. N., and Lund, P. K.: *Cancer Research* 4: 352-363 (June) 1944.

21. Cowdry, E. V.: *Properties of Cancer Cells*, Arch. Path. 30: 1245-1274 (Dec.) 1940.

22. Darlington, C. D.: *Nature*, London 154: 164-167 (Aug. 5) 1944.

23. Claude, A.: *Biological Symposia* 10: 111-130. J. Cattell Press, 1943.

24. Hargitt, G. T.: *Science* 100: 343-348 (Oct. 20) 1944.

The federal government by an act of Congress (approved Aug. 5, 1937) created the National Cancer Institute in the United States Public Health Service. This institute is a division of the National Institute of Health. Drafted along liberal lines, the act empowers the Surgeon General, in cooperation with a National Advisory Cancer Council, to (a) conduct, assist and foster research, (b) provide training and instruction in the diagnosis and treatment of cancer, (c) provide research fellowships in the institute, (d) secure for the institute consultative services and advice of cancer experts from the United States and abroad, (e) cooperate with state health agencies in the prevention, control and eradication of cancer and (f) procure, use and lend radium to other agencies and institutions.

The National Advisory Cancer Council, created under the same act, is authorized (a) to review research projects or programs submitted to it or initiated by it relative to the study of the cause, prevention or methods of diagnosis and treatment of cancer, (b) to collect information and make it available to scientists and the public and (c) to review applications for grants-in-aid for research and to certify to the Surgeon General its approval of grants for such projects which show promise. Several such grants have been made to Barnard Hospital.

At the present time fourteen of our forty-eight states have full time divisions of cancer control. In three of these states (Missouri, New Hampshire and Vermont) the law is administered by cancer commissions, in ten (Alabama, Connecticut, Georgia, Illinois, Maine, Massachusetts, New York, Rhode Island, South Carolina and West Virginia) by the State Department of Health, in one (Texas) by the state university.

A complete state cancer control program usually provides for:

1. The establishment of tumor clinics or hospitals for the diagnosis and treatment of cancer.
2. Reporting of cancer cases by physicians, hospitals and pathologic laboratories to the division of cancer control.
3. A system of follow-up of cancer cases.
4. Pathologic laboratories for tissue diagnostic service.
5. Statistical and epidemiologic records of case reports, death reports and pathologic laboratory reports.
6. Dissemination of information about cancer to physicians and to the public.

In that phase of the cancer problem dealing with the actual care of the patient, the Veterans Administration has perhaps a greater responsibility than has any other institution. The population of cancer cases in the Veterans hospitals has been steadily rising for several years and has now reached a total of about 1,400. At the Veterans Facility, Hines, Ill., there are 500 beds exclusively for cancer patients, and a new 600 bed cancer hospital is under construction. In New York City there are 200 beds for cancer patients, in Los Angeles 125 beds, in Portland, Ore., 50 beds and in Atlanta, Ga., 50 beds. As many as 800 cancer cases have been admitted to Veterans hospitals in one month, and the average for the year 1944 so far has been well over 700 new cases per month. According to the medical director, Dr. C. M. Griffith, 4 or 5 thousand beds will be needed for cancer cases alone, when the 10 to 15 million veterans of the present war reach the age of high cancer incidence, twenty to twenty-five years from now. The concentration of these cases in large government hospitals should be a rich source of material for extensive clinical cancer studies and experimental therapy.

Increasing interest in the coordination and integration of cancer research on a national scale is evidenced

by the number of conferences held during the last few years dealing with various aspects of the problem. A conference on gastric cancer was held Oct. 11 and 12, 1940 under the auspices of the National Advisory Cancer Council at the National Cancer Institute, Bethesda, Md. The proceedings were published in the February 1941 (volume 1, number 4) issue of the *Journal of the National Cancer Institute*. This gathering was unique in that it was the first time the laboratory investigator, the surgeon, the radiologist and the pathologist were brought together to exchange ideas and experiences and to develop plans for cooperative research on gastric cancer.

In June 1942 an endocrine-cancer conference was held at Atlantic City. More recently (September 1944) a conference of parental influence in relation to human cancer was held at the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine. The difficulties and the barriers that need to be overcome in launching studies in human genetics were fully recognized. However, the conference pointed out the need for closer cooperation between those working with cancer in experimental animals and those working with human cancer as a means of suggesting problems from one field which are suitable for attack from another. It was concluded that animal experimentation had succeeded in identifying in cancer two major and interacting influences. One of these is genetic, the other nongenetic. The nongenetic influences include certain chemicals, certain physical agents, endocrine imbalance and agents sometimes present in certain body fluids. In man, some nongenetic influences have been identified and genetic influences have been strongly suggested, at least in some forms of cancer. This evidence makes it imperative that we extend our knowledge of the interaction of these two major influences to man, and in such studies it is desirable to include all types of neoplasia, benign and malignant, as well as conditions leading to either of these.

A second gastric cancer conference was held recently (Nov. 11, 1944) at Memorial Hospital in New York City. Some of the papers read and the subjects discussed were (a) Gastric Physiology in Relation to Gastric Carcinoma, (b) Experimental Gastric Cancer in Mice, (c) Metabolic Abnormalities in Gastric Cancer, (d) Disturbances of Sugar Metabolism in Gastric Cancer, (e) Chemical Changes in Gastric Mucosa, (f) Observations on Chronic Gastritis and Cancer and (g) the Occurrence of Multiple Cancers of the Human Gastrointestinal Tract. The proceedings of this conference will appear in an early issue of the *Journal of the National Cancer Institute*. In the future, conferences on the cytology of the cancer cell, on the role of radio-biology in cancer, nutrition in relation to cancer and other phases of the problem will be sponsored as the need arises.

At the present time the National Cancer Institute acts as a repository for various inbred strains of animals and numerous transplantable animal cancers. We maintain 31 transplantable tumors in mice, 3 in the rat, 1 in the guinea pig and 1 in the rabbit. There are also available 8 inbred strain of mice, 1 inbred strain of rats and 1 of guinea pigs. These are essential biologic tools of cancer research. Frequent requests are received for these materials, which are furnished, of course, free of charge.

Perhaps it is apparent now that the attack on the cancer problem requires the combined efforts of many men trained in many different branches of the basic sciences of biology, chemistry and physics.

In conclusion, I may summarize by saying that the cancer problem as seen from the federal level includes the education of the public, the postgraduate education of physicians in the diagnosis and treatment of cancer, the loan of radium to hospitals and tumor clinics, the assisting of the states in setting up full time departments of cancer control in the respective state boards of health, advice and guidance to universities and medical schools desiring to establish departments of oncology or cancer biology, the establishment of prevention and case finding clinics, grants-in-aid to various institutions and individuals for cancer research, promotion of conferences on the various phases of the cancer problem, and the continuation of long time cooperative studies in the fundamentals of cancer biology. All this can best be accomplished, I believe, through the appointment of special cooperative committees. Such committees should be selected from members of the various cancer research foundations, from the American Cancer Society, from the American Association for Cancer Research and from various other institutions that are actively engaged in cancer control, prevention, therapy and research.

The National Cancer Institute realizes that the solution of the cancer problem is not a one man or a one institution job and that under the National Cancer Act we have certain mandatory duties in cancer control. We desire to accept our share of this responsibility. Our research program in no way precludes or hampers research in other institutions. On the contrary, through the efforts of the National Advisory Cancer Council and our grants-in-aid, private research will be stimulated and encouraged.

ANESTHESIA STUDY COMMISSIONS

HENRY S. RUTH, M.D.

PHILADELPHIA

Many reasons may be presented to support the fact that the specialty of anesthesiology at the present time is an accepted and expanding field within medical practice. It is also true that many controversial aspects still exist within it. Well founded, scientific differences of opinion are healthy and thought stimulating. On the other hand, conceptions held through lack of information or experience usually prove detrimental to any movement. This is particularly true of anesthesiology, which, representing one of the more recent comprehensive branches of medicine, has not had sufficient time to fulfil more than a small portion of the possible opportunities for service. Consequently there are today more instances of inefficient application of anesthesia perhaps than of correct management. Therefore any measure which disseminates knowledge of proper anesthesiologic thought, particularly among those not actively engaged in the application of modern anesthesiology, would appear valuable to those concerned, including the profession as a whole and candidates for surgery. For these reasons a description of anesthesia study groups probably would be valuable at this time.

OBJECTS OF ANESTHESIA STUDY GROUPS

The current method of reasoning and deduction followed by anesthesiologists is not too well known outside of the specialty. The surgeon naturally desires a surgical field which facilitates his manipulations to the

fullest extent, but he should not demand a method of anesthesia in order to obtain this that would also increase the mortality and morbidity rate of his patients. He would never do so, of course, if he was aware of the potentialities involved. The internist is mainly concerned with proper diagnosis and, where surgery is indicated, the proper preoperative and postoperative care. The anesthesiologist, whose entire attention is directed to the anesthesia, is concerned with all these factors and is equipped to understand more thoroughly the effects of anesthesia on both normal and abnormal patients and their significance with regard to the postoperative course. Therefore a constant interchange of thought is indicated between surgeon, internist and anesthesiologist in the best interests of patients. Invariably this is accomplished by staff conferences. The formation of anesthesia study groups achieves the same object between institutions by a discussion of fatalities occurring from anesthesia and of other interesting anesthetic situations. A medical staff handicapped by a poor or mediocre anesthesia service may obtain much information from the opinions expressed by surgeons and internists connected with institutions where modern anesthesiology is applied and from the statements of anesthesiologists in attendance at such discussions. The number of possible variables contributing to postoperative complications is large, and, unless an anesthesiologist is present and contributes to a discussion of them, instances in which anesthesia has a direct bearing on their production oftentimes are overlooked, or, less frequently, the anesthesia may be blamed erroneously for the difficulties. In addition, no new anesthetic agent or method can be truly evaluated until a large series of administrations is consummated. Certain detrimental aspects may appear either late or early in the series. Through the discussions at study groups, all institutions participating will have the advantage of the experiences of others and will profit from them shortly after they take place.

HISTORICAL

To the best of my knowledge, the Anesthesia Study Commission of the Philadelphia County Medical Society was the first instance of the formation of a group for this purpose by a representative body of organized medicine. In 1935, at my suggestion, the Anesthesia Mortality Committee of that society was appointed. It consisted of surgeons, internists and anesthesiologists from Philadelphia to study fatalities resulting from anesthesia. The work of the committee was originally patterned after the activities of the maternal mortality committees. Blanks were formulated for reporting fatalities. Originally the fatalities studied were limited to those occurring before reaction from anesthesia was complete.

In 1937 the status of the committee was changed to that of a commission, appointive every three years, instead of annually, as before. The number of physicians on the commission was increased, and representatives of some of the surgical specialties were included. About this time we observed that fatalities frequently were not reported to us. On inquiry we learned that the phrase "before reaction from anesthesia" was either unconsciously or wilfully interpreted as "fatality resulting from anesthesia." From our activities it was evident that a material number of fatalities were being classified as sudden deaths from other causes. We therefore requested a report on fatalities occurring the day of or the day after a surgical operation. A noticeable increase in the number of reports was evident immediately.

In 1940 the name of the commission was changed to the Anesthesia Study Commission. This was proposed for a twofold purpose. When a request for a report was received from the "Mortality Commission" it appeared that some hospitals believed that the group desired to unearth incriminating information, rather than function as an educational venture. Secondly, under the former title the program of activities was limited necessarily to fatalities only. Under the title of Study Commission many interesting discussions could be held on case reports in which a fatality had not occurred but where many factors of an informative nature could be discussed concerning an administration of anesthesia following which the patient recovered. Therefore we are now active under this designation.

A similar study group was initiated in 1941 by a few Cleveland anesthetists titled the Anesthesia Study Commission of the Ohio Society of Anesthetists. In 1943 there was established the Committee on Anesthesia Mortality of the American Society of Anesthetists, Inc. These two groups function by mail, the former by means of mimeographed sheets to its members and the latter by publications of case reports in the News Letter of the society. Both study fatalities and complications occurring during or subsequent to anesthesia, by publishing case reports and later making known at least the more valuable comments and discussions. These types of study organizations are undoubtedly of value, but their activities are confined mainly to anesthesiologists. Their work should not be minimized and should be continued, but, at the same time, they do not offer the opportunity for exchange of thought between the various specialties of medicine.

In order to explain more fully the possible functions of an anesthesia study group, the activities of the Anesthesia Study Commission of the Philadelphia County Medical Society will be explained in some detail.

THE COLLECTION OF REPORTS

Blanks of various types on which case reports are made have steadily been used. Reports are solicited from all hospitals in the county. Members of the commission are held responsible for reports from the institutions which they represent. An attempt is made to represent the remaining hospitals by means of members of the society, not on the commission but selected by its officers, who are friendly and sympathetic toward the work. The reporting of cases, unfortunately, is on a purely voluntary basis. This system, naturally, is not entirely efficient, in that not all fatalities are made known to us. This is true especially of deaths occurring in institutions which maintain poorly conducted departments of anesthesia. These hospitals probably have the largest number of fatalities from anesthesia, and they therefore may believe that their difficulties should be concealed. On the other hand, it is those organizations which could profit to the greatest extent from the discussions. This handicap is being overcome and, we believe, will steadily diminish in the future. At the present time a growing number of instances of reportable cases from these sources is called to our attention through the efforts of certain of their own staff who are advocating an improvement of the anesthesia service or by word of mouth from other members of the profession whose interest has been stimulated by the work. Our system of reporters, unfortunately, is somewhat disrupted by wartime restrictions on the number of available interested physicians who would be cooperative, but there appears to be every reason

for the restoration of this system immediately in the postwar period, in view of the fact that it was so successful in the prewar period.

The outstanding problem militating against the greatest possible value of the study rests in the reliance on voluntary reports. Well trained and competent anesthesiologists are completely cooperative in supporting the investigation. It is natural that reports from such sources rarely constitute obvious errors—those most indicative of correction. Until some type of official pressure or further stimulation of interest is applied, this condition cannot be rectified rapidly. One solution may be offered in those states where the date of a surgical operation is included on the death certificate as well as the date of death. By means of the active support of the officers of the county medical society, the Department of Vital Statistics or similar organizations could supply the commission with the names of the patients and the institution where a fatality has occurred the day of or during a determined interval following surgical procedures. The reporter representing that hospital could then execute the reporting blank for the commission on the fatality. In some countries it is legally mandatory that these fatalities be reported.

DISCUSSION OF REPORTS

Reports are sent to the society headquarters or to the chairman or secretary of the commission. Meetings are held once a month, which meetings are open to all practicing physicians, residents and interns. One teaching institution, before the outbreak of the war, valued the activities of the commission to the extent that at least one representative of the surgical department was required to attend each meeting of the commission in order that a report might be given at the next surgical conference of that institution. Our meetings have been of sufficient value to attract numerous nonresident visitors. It is unusual for surgeons and practitioners of the surgical specialties who have once attended not to be interested to the extent of repeating their visits.

For the open monthly meetings the chairman selects the most interesting case reports and presents them from the chair. At no time does the chairman mention the name of the patient, the name of the surgeon or the name of the hospital connected with the affair. I believe that this is most important and should be followed by those who may be stimulated by this paper to initiate groups in their own localities. Exception is made only when an anesthetist or a surgeon may desire advice on a particular problem and publicly announces that the case report originated in his own practice and offers to supply further information during the discussion.

After the reading of the case report the discussion is opened to the floor. Visitors as well as members of the commission are encouraged to take part. The discussion may involve any aspect of the report. Anesthesiologists are very free in their criticism of anesthetic methods employed, but they are just as cautious in commenting on any error of surgical diagnosis, judgment or technic. This aspect of the discussion is supplied by the surgical members or visiting surgeons. If this accepted rule is not observed, the chair accepts the prerogative of maintaining the discussion within these prescribed lines. Internists contribute by making suggestions concerning preoperative, supportive and postoperative treatment. At the conclusion of the discussion a vote is taken from the members of the commission to determine, first, whether the majority believe the fatality is preventable or unpreventable, both

from the point of view of anesthesia. Only preventability from anesthesia is recorded. For example, a purely surgical death, acknowledged as such by the surgical consultants and visiting surgeons, would be classified as unpreventable from the point of view of anesthesia. If the fatality is voted preventable, a further vote is requested to decide the factors which may have initiated the death. These may include, for example, overdose or improper selection of preanesthetic drugs, an unwise selection of the anesthetic agent or method, errors in the technic in the application of the anesthetic agent, lack of or improper supportive measures during anesthesia, or improper postanesthetic care. Some instances have occurred in which it has been impossible for the commission to decide whether the fatality has been preventable or unpreventable, whereupon a request may be made for additional data.

Periodic closed meetings are held by members of the commission only, to discuss fatalities obviously preventable or unpreventable or not involving interesting and instructive aspects. Such discussions are brief, and the deaths involved are rapidly classified and recorded.

MANAGEMENT OF FINDINGS

The conclusions of the commission are recorded by the secretary. In addition, a stenographer is present at the meetings to transcribe the discussion. From these data, statistics are filed. Public reports of the commission's activities are made at intervals. A complete report, based on ten years' activities of the commission, is contemplated. This, we believe, will be informative to the medical profession in general on the problems involved in and the results of the application of anesthesia.

INTERESTING DATA ALREADY ACCUMULATED

It would seem proper at this time to call to attention some of the more interesting findings and deductions from the work of this commission. At the inception of the work of the commission, numerous statements were made to the chairman that in a medical center such as Philadelphia there would not be sufficient fatalities which could be considered entirely or partially attributable to anesthesia to occupy the attention of such a commission. Suffice it to say that in our files today we have 80 case reports as yet undiscussed, although the meetings have been held regularly except during the summer months. Since the commission was formed, of the cases classified 67 + per cent were voted as preventable and 22 + per cent as unpreventable from the point of view of anesthesia. The remainder required additional data for classification. The number of instances in which a fatality has been diagnosed as sudden death from other causes, when mismanagement somewhere along the line of anesthetic application is obvious, is indeed surprising. The stated causes in such instances are usually given as coronary occlusion, coronary embolus, cerebral embolus, pulmonary embolus or acute cardiac failure.

A common preventable cause of death was the lack of resuscitative measures or institution of ineffective ones. Numerous instances were encountered in which the patient was definitely hypoxic and oxygen was not administered to rectify the condition, or a supply of oxygen was applied to the face of a patient in respiratory paralysis, without the instituting of means of supplying oxygen to the alveoli of the lungs. Again, many times cardiac stimulants were administered to patients requiring inflations of oxygen or replacement therapy by

means of the correct indicated fluids, plasma or blood. In the hands of the uninformed, when anesthetic difficulties are encountered, intracardiac injections of epinephrine, often in overdosage, are too popular and the simple, indicated corrective measures ignored. It was the consensus of the commission frequently that, if the patient had not already succumbed, the attempted remedial measures alone would have been sufficient cause of death. It would appear that the more dramatic needles, analeptics and stimulants too often have a wider application than the indicated patent airway and simple, quiet inflations of the lungs with pure oxygen.

Preventable deaths were not uncommon because of overdosage of preanesthetic sedative drugs, errors in anesthetic judgment, improper selection of the anesthetic agent and method, tolerance of respiratory obstruction during or following anesthesia, inadequate oxygenation, especially with cardiac patients, and improper anesthetic management in general. One of the questions asked for on the report is the surgeon's diagnosis of the probable cause of death. It was interesting to note the numerous instances in which the surgeon believed the fatality was totally applicable to other causes, but the commission, unanimously and without dissension, voted the cause of death as entirely preventable from the standpoint of anesthesia.

COMMENT AND SUMMARY

The probable foremost benefit is the direction of the attention of the medical profession in general to fatalities occurring from improper anesthesia and its mismanagement, which otherwise would be considered attributable to other causes. If the inception of study groups of this character was functioning more generally, a more accurate estimate of the mortality rate from anesthetic practices could be obtained. The knowledge of basic improvements in the choice of agent, technic and general management of anesthesia, indicated resuscitative measures, and correct preoperative and postoperative care could be more widely disseminated. Finally, such group studies would encourage the keeping of more accurate anesthetic records, which to date we have found to be sadly inadequate in general but which are so necessary in determining the role played by anesthesia in the surgical mortality rate.

ABSTRACT OF DISCUSSION

FREDERICK P. HAUGEN, Philadelphia: The death of a person while under the influence of an anesthetic constitutes a major tragedy of surgery. The death may be, and frequently is, unpreventable. It is through intellectually honest discussion of the factors leading to the tragedy that progress can be made in preventing similar occurrences. Such discussion between surgeon and anesthetist may be devoid of results, for each tends to excuse or blame the other. There may be much to be learned, however, by the objective discussion of such cases by a group as has been described by Dr. Ruth. Operating room tragedies are frequently so efficiently covered up that scarcely any one outside the immediate witnesses will know of them. There are good reasons why this is done, of course, but it emphasizes the necessity for extreme tact in obtaining information for study commissions. It also emphasizes the necessity of respecting the anonymity of the principals. It is gratifying to us who are on the commission to note the interest anesthetists and surgeons have in learning the opinions on their cases, for often they will disclose their identity to clear up some point of discussion. A representative of one of the larger life insurance companies told me that his company considered that an individual undergoing surgery had one chance in four hundred of dying from the anesthetic alone. That was a rather

startling statement and quite in contrast to one by a gynecologist who expressed surprise that our anesthesia study commission would have cases to study. Probably the true figure for anesthetic deaths is somewhere between these, and it would seem that the two extremes could be brought closer together by a proper interpretation of the cause of deaths. There is a tendency to look for causes beyond temporal control, and convenient diagnoses are coronary occlusion, pulmonary or cerebral embolism, or status lymphaticus. The apparent willingness of some of the men entrusted with patients' lives to condone the conditions which permit ignorance of the fundamentals of physiology and pharmacology to expose people daily to needless risk is the disturbing feature. It offers a challenge to anesthesiologists to stimulate interest in their own communities in a study of anesthesia morbidity and mortality. To Dr. Ruth goes the credit for showing that this can be done.

DR. ROLLAND WHITACRE, Cleveland: In an effort to decrease the surgical mortality rate it has always been a common practice for anesthesiologists and surgeons to discuss the fatalities and complications resulting from anesthesia. Unfortunately the value of these discussions is limited because they are usually confined to the staff of only one institution. Other physicians do not have an opportunity to study these cases objectively because they are rarely reported in the literature. From an educational point of view this represents a tremendous waste of clinical material. As physicians interested in the progress of anesthesiology, we are greatly indebted to Dr. Ruth for organizing and putting into successful operation a method whereby an increased number of physicians can study the clinical reports of fatalities during anesthesia. Dr. Ruth's work in Philadelphia has served as a stimulus for the formation of anesthesia study commissions on a statewide and later a nationwide basis. This Study Commission of the Ohio Society of Anesthetists, which was inaugurated in 1941, has not only served as a means of disseminating information regarding problems in anesthesia but has also been an important factor in the development of an active state society devoted to the advancement of anesthesiology. Perhaps the most important function of the anesthesia study commissions is to acquaint the medical profession better with the number of complications and deaths that occur as a result of anesthesia. Because of incomplete and inaccurate records there is a prevailing impression that complications rarely occur during anesthesia. An abundance of evidence is being accumulated by the various study commissions and groups interested in keeping accurate records that this opinion is not supported by facts. Many more deaths result from improper anesthesia than is generally realized. These findings bear out the remarks made by Dr. John C. Warren in his presidential address in 1850 at the fourth annual meeting of the American Medical Association. Dr. Warren at that time, only four years after anesthesia was introduced, warned of the dangers of relegating this important service to improperly trained individuals. In the succeeding ninety years no evidence has been presented to alter this opinion.

DR. HENRY S. RUTH, Merion Station, Pa.: A project of this kind can be performed in an entirely anonymous fashion. Also it emphasizes and exposes many facts otherwise concealed. I trust that this small venture of ours may spread at least to some extent to other portions of the country.

Hospital Facilities in Formosa.—There are many government, public and private hospitals scattered throughout Formosa, but those of any considerable size are limited; only a few have a capacity greater than 80 beds. The majority of the private hospitals and clinics have 10 to 50 beds. Of the large hospitals, all except four or five are administered by the government. Taihoku is the medical and hospital center of the island and the largest and best hospitals are located there, as are a leprosarium and an institute for the control of venereal diseases. There is only one small tuberculosis sanatorium on the island. There is a medical school attached to the Imperial University of Taihoku. —Simmons, James S., and others: *Global Epidemiology*, Philadelphia, J. P. Lippincott Company, 1944.

THE THERAPEUTIC INDICATIONS OF THE SULFONAMIDES AND PENICILLIN

FRANCIS G. BLAKE, M.D.

NEW HAVEN, CONN.

The indications for chemotherapy with the sulfonamides and penicillin may be divided into those which are well established through common and consistent experience and those concerning which there is uncertainty either because of conflicting results recorded in the literature or because experience is still too limited or uncontrolled to provide a definite conclusion.

Because of the limitations of time I shall confine my remarks largely to the positive indications for the use of the sulfonamides and penicillin, avoiding discussion of debatable territory and the long list of virus, bacterial, mycotic, rickettsial and other infections in which neither the currently available sulfonamides nor penicillin are indicated.

The first and most important indication is the etiology of the infection in the patient to be treated. Factors which may modify this indication and the choice of drug to be used are the site of the infection, the nature of the pathologic process, the immediate and potential severity of the infection both with respect to complications and ultimate outcome, and, in the case of the sulfonamides, known or potential liability of the individual patient to the more serious toxic effects of these drugs.

The infections which are curable or, if not cured, favorably modified by the chemotherapeutic agents under discussion may be divided into three groups with respect to etiology:

1. Those in which both the sulfonamides and penicillin are more or less effective, though not necessarily equally so, namely certain gram positive and gram negative coccic infections: hemolytic streptococcus, pneumococcus, staphylococcus, Streptococcus viridans, meningococcus and gonococcus.

2. Those in which the sulfonamides are of value but not penicillin, namely gram negative bacillary infections such as those caused by the colon bacillus, dysentery bacilli, Hemophilus influenzae, Friedländer's bacillus and Ducrey's bacillus.

3. Those in which penicillin is of value but not the sulfonamides, namely syphilis, yaws and possibly other spirochetal infections and those due to the Clostridia—gas gangrene.

As for the first group, in the less severe hemolytic streptococcal infections in which there is tissue invasion without suppuration, necrosis or bacteremia, such as erysipelas or lymphangitis, the sulfonamides are ordinarily sufficiently effective to be indicated as the drug of choice, if for no other reason than because of simplicity of administration. The same may be said of the milder upper respiratory mucous membrane infections, such as tonsillitis or pharyngitis, although the real value of the sulfonamides in these infections is still debatable.

In the more severe hemolytic streptococcal infections with suppuration or necrosis and with or without bacteremia penicillin appears to be much more effective

Read in a panel discussion on "Chemotherapy" in the General Scientific Meetings at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 12, 1944.

and consequently the drug of choice. It often succeeds in bringing about a cure when the sulfonamides have failed. Included in this group are severe cellulitis, mastoiditis with or without intracranial complications, meningitis, pneumonia, empyema, pericarditis, endocarditis, peritonitis, puerperal sepsis, osteomyelitis, suppurative arthritis and infected wounds. In such conditions as empyema, meningitis and arthritis it must be injected locally as well as intravenously or intramuscularly.

In pneumococcic infections the sulfonamides have proved sufficiently effective in lobar pneumonia to justify their continued use as the drug of choice at the beginning of treatment, but one should be prepared to shift to or add penicillin promptly in cases that do not respond quickly to the sulfonamides. In very severe pneumonia and particularly in the aged and in other pneumococcic infections such as mastoiditis, meningitis, empyema, endocarditis and peritonitis penicillin is more effective and consequently indicated from the start.

In staphylococcic infections such as furunculosis, carbuncles, osteomyelitis, mastoiditis with or without intracranial complications, meningitis, sinus thrombosis, pneumonia, lung abscess, empyema, pyelonephritis and wound infections with or without staphylococcemia the sulfonamides, though occasionally beneficial, have on the whole been disappointing. Penicillin, on the other hand, has proved very effective in a high proportion of cases and is unequivocally the drug of choice. Failures do occur, of course, possibly because of the fact that some strains of staphylococci contain penicillin inhibitor, as recently shown by Kirby, similar in its inhibiting action to the penicillinase found in colon bacilli.

Streptococcus viridans subacute bacterial endocarditis has rarely responded more than temporarily if at all to the sulfonamides. Recent experience with large amounts of penicillin given in three to four week courses indicates that in some cases it may be effective in inducing remissions. Although much more experience is needed to define its ultimate usefulness, its trial at least is indicated.

In the two important gram negative coccic infections, *Neisseria meningitidis* and *Neisseria gonococcic* the sulfonamides have been indicated in the former that they are still indicated and penicillin should be resorted to only in those cases which fail to respond to the sulfonamides or possibly as an additive treatment in the very severe fulminant cases.

Penicillin, now demonstrated to be more effective than the sulfonamides in curing gonococcic infections, would appear to be indicated at least in all cases complicated by arthritis, ophthalmia, endocarditis, pericarditis, peritonitis, epididymitis and prostatitis and in all cases of sulfonamide resistant gonorrhea. Whether it will properly replace the sulfonamides in simple acute urethritis remains to be determined.

Of the second group of infections, in which the sulfonamides are indicated and penicillin is contra-indicated because it is ineffective, little need be said except to reiterate that they comprise a group of gram negative bacillary infections including colon bacillus infections, particularly of the urinary tract, *Hemophilus influenzae* otitis media, mastoiditis and meningitis, the bacillary dysenteries, Friedländer bacillus infections, including pneumonia and soft chancre.

Similarly little need be said of the third group, in which the sulfonamides are of little or no value and in which penicillin appears to be indicated, other than to state that the exact usefulness of penicillin in human clostridial infections remains to be determined and the final definition of its already established usefulness in syphilis will require prolonged study.

789 Howard Avenue.

Clinical Notes, Suggestions and New Instruments

STAPHYLOCOCCUS ALBUS SEPTICEMIA FOLLOWING NEPHROLITHOTOMY

RECOVERY WITH PENICILLIN

ROBERT H. HERBST, M.D., AND JAMES W. MERRICKS, M.D., CHICAGO

Mortality with hemolytic *Staphylococcus albus* septicemia occurs in about 90 per cent of cases. We have not previously seen a patient survive with this type of infection. When the skin is covered with a myriad of pustules they reflect the fulminating state of the infection in every organ in the body. In a previously unreported personal case several years ago following litholopaxy death ensued although a blood sulfathiazole level of 7.5 mg. was maintained. The skin of the patient was studded with minute white pustules and at postmortem examination small collections of pus, the result of infected emboli, were found throughout the body. The present patient recovered with penicillin after having been resistant to sulfadiazine. Recovery occurred in spite of hundreds of these tiny pustules in the skin, accompanied by bilateral bronchopneumonia, toxic myocarditis, toxic hepatitis, acute glomerulonephritis and renal abscess.

Some authors believe that a blood sulfonamide level of 4 to 5 mg. is sufficient to bring about recovery from staphylococcemia. Apparently this depends on the virulence of the organism. Strains of *Staphylococcus albus* may be very resistant to chemotherapy. Varieties of *Staphylococcus aureus* showing white mutations may be difficult to treat. Our patient who recovered falls in the latter category, as cultures from his infected left kidney changed from *Staphylococcus albus* to *aureus* twice in a period of four years.

REPORT OF CASE

A man aged 37, an Italian, was admitted to the Presbyterian Hospital April 19, 1944 complaining of almost constant pain in the left flank which had been present for many months. Stones had been removed elsewhere from the left kidney nine years previously. The temperature was normal, the heart and lungs were clear, the pulse rate was 88 beats per minute, the blood pressure was 168/100. The urine was clear, with 3 to 5 leukocytes and 30 erythrocytes to a high power field, with a trace of albumin. Recent previous study of urine obtained from each kidney revealed no pus, no organisms and negative culture from the right, a few leukocytes, with gram positive cocci on stain and a moderate growth of hemolytic *Staphylococcus aureus* with white mutations, previously reported "albus" on two occasions, from the left kidney. Radiographic studies of the urinary tract revealed kidney outlines of normal size and position with a large area of increased density over the left renal pelvis and multiple small areas over the upper and lower poles of the left kidney. Excretory urograms revealed good function of both kidneys, with only slight dilatation of the calices of the left kidney. Additional x-ray studies showed normal gallbladder function, negative stomach and colon. Chest fluoroscopy was negative. Stool cultures were negative. Serologic studies were negative. Blood count revealed 5,500,000 red blood cells and 7,000 white blood cells. A hemoglobin of 16.5 Gm. was found.

From Rush Medical College of the University of Illinois and the Presbyterian Hospital.

The blood nonprotein nitrogen was 31 mg. per hundred cubic centimeters, creatinine 1.5 mg. per hundred cubic centimeters and urea nitrogen 11.

At operation the kidney was difficult to free. A longitudinal nephrotomy incision was made over the upper pole, with removal of stones in that calix, while the large pelvic stone and lower pole stones were removed through a mid lower pole incision. X-ray examination of the exposed kidney revealed no stones. The kidney was closed around a soft tube with mattress sutures and a pad of fat fastened over the suture line. Although blood loss on the table was minimal, 1,000 cc. of whole blood was given postoperatively.

The temperature rose to 104 F. the first postoperative day and fluctuated from 101 to 105 F. for the next fourteen days. The patient ate and took all fluids by mouth from the second postoperative day. Throughout his hospital stay his appetite remained almost voracious, requiring heavy feedings supplementary to his regular meals. Sulfadiazine 0.5 Gm. was given every six hours the first four days, then 1 Gm. every four hours the next two days, a total of 20 Gm., when it was discontinued because the urinary output began to fall, dropping to 300 cc. on the eighth postoperative day. A few erythrocytes but no crystals were found in the urine. Blood sulfadiazine levels unfortunately were not done. Positive blood cultures of hemolytic *Staphylococcus albus* were obtained on the fifth postoperative day; the cultures turned a faint yellow a few days later. Blood nonprotein nitrogen on the tenth postoperative day was 131 mg. per hundred cubic centimeters and the patient was somewhat stuporous. Examination of the chest revealed evidence of a bilateral bronchopneumonia, the signs persisting for almost two weeks. Blood nonprotein nitrogen was 147 mg. per hundred cubic centimeters, creatinine 4.4 per cent on the eleventh postoperative day, when the temperature was 104 F.

Penicillin 200,000 units was given on the thirteenth postoperative day in 1,000 cc. of 5 per cent dextrose in isotonic solution of sodium chloride intravenously. The temperature fell from 104 to 100 F. in twenty-four hours. The first chill occurred on the third day of penicillin after 500,000 units, when a slight subicteric hue was noticed in the scleras. Purpuric spots and many pustules appeared all over the body in uneven distribution, remaining for almost a week. The patient was exceedingly apprehensive. Hemoglobin on the thirteenth postoperative day was 7.5 Gm., erythrocytes were 2,250,000 and leukocytes were 3,000. The urine showed heavy formation of albumin.

Penicillin was then continued by intramuscular and intravenous routes, depending on the patient's tolerance, averaging 150,000 units a day for the next three days; then the dosage on the seventh day of penicillin was increased to 180,000 units a day for two days, when the temperature fell to 99.6 F. From then on the dosage varied from 100,000 to 190,000 units a day. Supportive treatment included digitalis, vitamin C and blood transfusions, of which seven were given in 500 cc. amounts. The temperature first became normal on the thirty-ninth day of penicillin therapy after a total dosage to that point of 5,775,000 units of penicillin.

Although the blood culture became negative on the fifteenth day of penicillin, slight elevation in temperature with pain in the left flank continued at times until the incision was reopened on the eighty-third postoperative day. Several abscess cavities in the left kidney were broken down with the finger and drained. Daily dosage had been averaging about 60,000 units from the thirty-ninth to the forty-sixth day after starting penicillin, when the drug was discontinued (fifty-eighth postoperative day) for several days, then was administered again when fever recurred and continued for a period of fifteen days; meanwhile an aqueous penicillin solution was used for several days to irrigate the nephrostomy wound.

For five days after the renal abscesses were drained 100,000 units a day, administered in hourly doses of 10,000 units dissolved in 1 cc. of cooled isotonic solution of sodium chloride, was given. The penicillin was then discontinued after having been given almost continuously for eighty-one days with a total dosage of 8,355,000 units. The patient was released from the hospital on the one hundred and thirty-fifth postoperative day, with a left renal sinus, which six months postoperatively is practically healed.

COMMENT

It has been shown by Florey¹ and by Rammelkamp² that about 60 per cent of penicillin given intravenously is excreted in the urine within an hour. At the end of this time the concentration of penicillin in the blood is zero. Frequent reinjections are necessary to maintain an adequate blood level of penicillin. For this reason a large proportion of the penicillin this patient received was given in hourly doses by the intramuscular route between intravenous injections. In a recent editorial³ in *THE JOURNAL* penicillin excretory blockade was discussed. Simultaneous injection of 5,000 oxford units of penicillin and 30 cc. of diodrast reduced the excretion of penicillin from 60 per cent to 20 per cent in one hour. Another substance with a low toxicity, para-aminohippuric acid, also reduced the urinary output of penicillin and seems to warrant clinical trial. Our patient presented a self blockade in the form of a low renal function as revealed by the elevated blood chemistry and low urinary output at the start of the penicillin therapy. Because of this, more of the penicillin was retained in the blood stream and very possibly aided greatly in sterilizing it.

CONCLUSIONS

1. Prolonged penicillin therapy with a total dosage of 8,355,000 units undoubtedly prevented a fatal outcome in this instance.
2. Complete recovery did not occur until surgical drainage of the secondary renal abscesses was carried out.
3. Development of a successful method of penicillin blockade should reduce the amount of the drug necessary in a fulminating infection.

104 South Michigan Avenue.

SPONTANEOUS PNEUMOTHORAX PRODUCED
BY ASCENT IN AN AIRPLANE

LIEUTENANT COMMANDER HAROLD VINCENT HOLTER,
MC-V(S), U.S.N.R.

AND

LIEUTENANT ORVILLE HORWITZ, MC-V(S), U.S.N.R.

It is probable that air travel will become more prevalent after the war for persons of all ages and that such persons who may have suffered recent illness are likely to consult their physician before undertaking air travel. We believe that this report of a case of spontaneous pneumothorax in which the precipitating factor was the change of atmospheric pressure produced by ascent to 8,000 feet in an airplane, may influence the advice given to patients in this respect.

REPORT OF CASE

Pfc. E. A., aged 21, walked into sick bay on Sept. 13, 1944 complaining of pain in the upper right thorax, which had suddenly developed six days previously, while he was flying for the first time in an airplane. (The plane was a Marine "Commando" R5C, which had taken off less than an hour previously, and the altitude of flight was approximately 8,000 feet. Flying conditions were good; the air was smooth. The patient was a passenger sitting on the bucket seats attached to the side of the cargo portion of the plane, which is just behind the pilot's cock pit.) Since that time the pain had persisted. It was aggravated by walking, coughing, deep breathing or any type of increased exercise. The patient had been subject to frequent mild upper respiratory infections for some years, but there was no indication of pneumonia, pleurisy or tuberculosis in the past or family history. An x-ray film of the chest taken in September 1943 was considered negative.

Physical examination revealed a healthy appearing white man of moderate height and weight, not acutely ill but having some respiratory embarrassment. The trachea was deviated slightly to the left. There was hyperresonance and much decreased

1. Florey, H. W.; Abraham, E. P.; Cahin, E.; Fletcher, C. M.; Gardner, A. D.; Heatley, N. G., and Jennings, M. A.: *Lancet* 2: 177, 1941.

2. Rammelkamp, C. H., and Keefer, C. S.: *J. Clin. Investigation* 22: 425, 1943.

3. Penicillin Excretory Blockade, editorial, *J. A. M. A.* 126: 369 (Oct. 7) 1944.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writers and are not to be considered as reflecting the policies of the Navy Department.

breath sounds over the entire right lung area. The heart sounds were normal and the apical impulse was inside the midclavicular line.

X-ray examination of the chest on September 15 revealed about 60 per cent collapse of the right lung, as shown in the accompanying illustration. The patient was hospitalized and treated symptomatically.¹ Subsequent physical and x-ray examinations revealed increased expansion of the lung. On October 14 he was transferred from a forward area back to a U. S. Naval Hospital by means of surface craft with the following note: "Because of the condition described in this marine, who is connected with aviation, it is advisable that this man never fly again because of the danger of recurrence during flight. He is transferred to the U. S. Naval Hospital for further treatment and disposition with the recommendation that, in due time, survey from the service be definitely considered."

COMMENT

In considering the mechanism of this accident, it is probably easier to consider first the precipitating factor which is known than the predisposing factor which is questionable. Under normal conditions the pleural cavity is merely a potential space between the parietal and pulmonary pleura in which an average pressure of about 756 mm. of mercury is maintained. Again

under normal conditions the intrapulmonary pressure is kept approximately at the same level. In this case the pressure was rather abruptly dropped to about 560 mm. of mercury or by about 26 per cent, thereby creating a tendency for the lung to collapse partially. As long as the pleural cavity remained potential, this would not have been possible. But with the development of increased tendency to separate the pulmonary from the parietal pleura, a



Sixty per cent collapse of right lung

weakness in the pleura was exploited and pneumothorax occurred.

Another possibility is that a peripheral emphysematous bleb may have ruptured as the result of relative increase of pressure within the bleb itself. As far as the predisposing factors are concerned, evidence seems to point to adhesions or emphysematous blebs rather than to tuberculous infection in a large percentage of cases.²

It has lately been reported that patients with traumatic pneumothorax may be transported by air, at low altitudes, without jeopardy. In these cases the only change will be slight increase in the percentage of collapse of the lung, and, since a tear in the pleura already must exist, no further damage should be anticipated. In contrast to these individuals is the one reported in which the tear did not already exist but is merely a potential weakness which may be converted into a full tear by means of decreased atmospheric pressure.

Although no definite conclusion may be drawn from this particular case, it is our considered opinion that extreme caution should be exercised in advising patients who have had known diseases of the pleura about airplane travel.

SUMMARY

In a case of spontaneous pneumothorax the only apparent precipitating factor was the change of altitude due to ascent to 8,000 feet in an airplane.

1. Bailey, H., *Surgery of Modern Warfare*, ed. 2, Baltimore, William Wood & Co., 1942, vol. 1, pp. 41-42; vol. 2, p. 967.
2. Cecil, R. L., *Text-Book of Medicine*, ed. 6, Philadelphia, W. B. Saunders Company, 1943.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following reports.

The Council wishes to express its appreciation for the valuable assistance rendered in the preparation of this report by Drs. George M. Coates, Edmund P. Fowler, W. E. Gross, Walter Hughson (deceased), Isaac H. Jones, Dean M. Lick, Douglas MacFarlan, C. Stewart Nash, Horace Newhart, Paul E. Sabine and Burt R. Shurly.

HOWARD A. CARTER, Secretary

MINIMUM REQUIREMENTS FOR ACCEPTABLE AUDIOMETERS

1. A clinical audiometer is an instrument for measuring at prescribed frequencies the auditory threshold of any individual in decibels referred to a standard intensity level known as the "normal threshold of hearing." This is defined as the modal value of the threshold of audibility of a large number of normal ears of persons in the age group from 18 to 30 years. The intensity of the sound produced by an audiometer when the intensity dial is set at zero for any frequency should be corresponding to the normal threshold of hearing for that frequency. The threshold of hearing of an individual ear referred to as the normal threshold and is the audiometer setting in decibels corresponding to the faintest tone signal which the person being tested reports correctly that he hears the test tone at least two thirds of the number of times it is presented to him. In applying these tests the threshold should be approached twice as often from below as above the threshold.

2. The reference standard for "Normal Ear Threshold" for air borne sound at the specified frequencies for audiometers intended for general diagnostic purposes shall be established and maintained by the National Bureau of Standards. The average sound pressure levels at these frequencies shall be those stipulated under standardized test procedures by three standard receivers maintained at the National Bureau of Standards when the average voltages shown below are impressed across their terminals.

Frequency of Test Tone	Voltage Level in Decibels Referred to One Root Mean Square Volt
128	— 73
256	— 88
512	— 102
1,024	— 109
2,048	— 111
4,096	— 107
8,192	— 75

These voltages were determined by comparison with the output of Western Electric 552 receivers of the Western Electric 2A audiometers.

3. *Frequency Range.*—(a) An audiometer shall be capable of producing test tones over the frequency range from 128 to at least 8,192 cycles per second. The audiometer may generate discrete frequencies or may produce continuously variable frequencies over the whole or part of this range. In either case frequencies of 128, 256, 512, 1,024, 2,048, 4,096 and 8,192 shall be producible at clearly marked and definite settings of the frequency indicator.

(b) The frequency of each of these test tones shall not in any case depart by more than ± 2.5 per cent from the indicated frequency. Dials shall be marked so that frequencies can be easily read.

4. *Purity of Test Tones.*—At 128 cycles the sound pressure level of any single harmonic in the test tones at all intensity settings shall be at least 20 decibels below the sound pressure level of the fundamental, measurement to be made on a closed standard coupler with a volume of approximately 60 cu cm.

At all other frequencies the intensity of any harmonic shall be 25 decibels below that of the fundamental.

5. *Intensity Range and Calibration.*—Audiometers shall be capable of producing test tones of the purity prescribed at the various frequencies and of maximum intensity levels not less than those shown:

Test Tone Cycles per Second	Intensity Level in Decibels Above Normal Ear Threshold
128....	60
256...	80
512...	85
1,024...	90
2,048...	90
4,096...	90
8,192..	70

(a) Intensity levels at the foregoing decibel settings of the audiometer shall not differ from the specified values by more than ± 25 decibels.

(b) Intensity of test tones shall be variable in steps not greater than 5 decibels, with appropriate dial markings to indicate the respective intensity levels in decibels referred to the normal threshold as zero. The difference in measured intensity levels corresponding to two adjacent settings shall not vary from 5 decibels by more than ± 1.0 decibel for any frequency.

6. Audiometers shall be supplied with bone conduction receivers for measuring the threshold of hearing for bone conducted sound.

(a) A suggested procedure for establishing the normal threshold of hearing for bone conducted sound as measured by a particular audiometer is as follows. Determine at each frequency the intensity level, as measured by the intensity setting of the audiometer, which can just be heard by each of 5 normal hearing subjects when the bone conduction receiver is pressed against the mastoid just back of the ear. The average of the five measurements at any frequency is taken as the normal threshold for bone conducted sound of that frequency. This average will be the zero setting of the particular audiometer for bone conducted sound of that frequency. A "normal hearing subject" is defined as a person between the ages of 18 and 30 whose measured threshold of hearing for air borne sounds does not depart from the normal threshold by more than ± 10 decibels at any frequency. All measurements in the foregoing are to be made in a room free from extraneous sound of sufficient intensity to vitiate the measurements. Acceptance tests on this requirement may follow the same procedure.

(b) The bone conduction receiver shall be so constructed that it does not produce sound in the air to a degree that will affect the validity of bone conduction measurements. "To test for this requirement, the bone conduction receiver is held close to but not touching the ear. The audiometer setting for minimum audible intensity under this condition should be 10 decibels higher than when the receiver is pressed against the mastoid."

7. *Inherent Noise.*—The noise level due to alternating current hum, commutator ripple or any other cause shall be so low that it is inaudible to a normal hearing person in the presence of the test tone produced at any attenuator setting at any frequency.

8. If the manufacturer supplies with his instrument charts for plotting measured hearing loss, these charts shall comply with the following specifications: The chart is to be ruled with rectangular coordinates, with frequency as the abscissas and "hearing loss in decibels" as the ordinates. Frequencies shall be shown by vertical lines spaced at octave intervals. (For an instrument that produces test tones at intermediate frequencies, vertical lines to correspond to these frequencies should appear at the proper fractional parts of the octave intervals.)

Normal hearing for both air borne and bone conducted sounds shall be indicated by a single horizontal line marked line 0, near the top of the chart. "Hearing loss in decibels" shall be indicated by equally spaced horizontal lines, spaced at 10 decibel intervals and numbered downward from the 0 line. The dis-

tance between the octave vertical lines shall be two times the distance between horizontal 10 decibel lines.

9. *Guaranties.*—The manufacturer shall make to the purchaser the following guaranties: (a) That any defect other than those due to accident or damage from improper use that may appear within a period of one year from date of purchase will be corrected and the instrument recalibrated at no cost to the purchaser except for transportation charges; replaceable parts which may deteriorate with use, such as vacuum tubes, shall, by agreement, be supplied at reasonable cost.

(b) That the maker will provide adequate instructions for the proper care and upkeep of his products and will encourage the purchaser to send his audiometer at reasonable intervals to the factory or to a qualified distributor for check as to performance and needed servicing at a reasonable cost.

10. *Marketing and Advertising.*—Rules of the Council on Physical Medicine shall be adhered to by manufacturers of acceptable audiometers.

MINIMUM REQUIREMENTS FOR ACCEPTABLE ELECTRICAL HEARING AIDS

A hearing aid acceptable to the Council on Physical Medicine shall be demonstrably capable of increasing the intensity of sound between 300 and 3,000 cycles by at least 30 decibels. Firms shall meet the following requirements:

1. Hearing aids shall have imprinted on each transmitter and air or bone conduction receiver a model number (type or class) or some equally suitable identification.

2. The manufacturer shall supply with the instrument submitted for acceptance data obtained in his own laboratory or in a recognized independent laboratory to support any specific claims which he may make for his instrument. For example, a claim for controllable frequency characteristics should be substantiated by graphs showing the change in frequency response which can be effected. He shall also supply laboratory data in the form of graphs showing the overall acoustical amplification which the instrument will give over the frequency range from 512 to 4,096 cycles, outlining the method used.

3. The manufacturer shall state the possible voltage combinations and advantages resulting therefrom together with battery drain on A and B batteries at one half, three fourths and full volume settings.

4. A hearing aid may be judged not acceptable on the basis of a high inherent noise level.

5. The manufacturer shall furnish to the Council a copy of its guaranty to the purchaser.

6. There shall accompany each hearing aid clearly written instructions for its use.

7. The manufacturer shall give evidence that adequate facilities for servicing the instrument are available and shall furnish names and addresses of servicing agencies.

8. The manufacturer shall agree to furnish from stock to the Secretary of the Council on Physical Medicine a hearing aid for inspection and test. On the request of the Secretary, the manufacturer shall supply him with an order on any of the authorized agents for an instrument for test. On the completion of tests, the instrument shall be returned complete to the manufacturer.

9. All material used in manufacture shall be of first grade and the workmanship skilfully performed. The assembly of the instrument shall be inspected by the examiner, who shall determine whether or not the workmanship has been skilfully performed.

10. The firm shall be responsible for the ethical merchandising practices, financial dealings and contracts of its agents, sales representatives and service men with the purchasers of the instruments. The standards of merchandising and the acceptability of advertising shall meet requirements of the Council on Physical Medicine.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - CHICAGO 10, ILL.

Cable Address "Medic, Chicago"

Subscription price Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, MARCH 3, 1945

ANTISPASMODIC ACTION OF "HYPO- TENSIVE" EXTRACTS ON SMOOTH MUSCLES

The experimental demonstration by Abelous and Bardier in 1909 that urine contains a "hypotensive" substance gave impetus to a search for tissue extracts in treatment of hypertensive and myospastic states. Two products in particular received particular acclaim both here and abroad as effective antispasmodics. The two products, known as depropanex and padutin, are pancreatic extracts free from insulin, histamine and choline. A number of clinical reports emphasize their effectiveness in the treatment of intermittent claudication, ureteral colic, angina pectoris, dysmenorrhea and peripheral arterial disease. The benefits obtained were credited to a supposed antispasmodic action associated with direct relaxation of smooth muscles in the blood vessels, ureter or uterus. These extracts were administered orally or intramuscularly, and intravenous injections were considered capable of harm.

Dreisbach and his associates¹ performed careful laboratory experiments to determine the antispasmodic action, if any, of these extracts on the smooth muscles, subjecting circular muscles of the abdominal aorta, common carotid and femoral arteries, longitudinal muscle of the small intestine, circular muscle of the ureter and strips of bladder fundus in a Locke-Ringer solution to the effect of these drugs. Concentrations of padutin over four hundred times the possible theoretical tissue levels based on clinical dosage were necessary to produce some depression of intestinal ureteral and vascular muscles, but the same effect was produced by the preservative glycerin in this product. The same was true for depropanex and its preservative, phenol, for intestinal and ureteral muscles. Depropanex, independently of the preservative, caused stimulation of arterial and bladder muscles with concentrations twenty

to sixty times the theoretical concentration based on the recommended clinical dosage. Lower concentrations were devoid of demonstrable effects. The ineffectiveness of these agents on smooth muscles is in accord with their ineffectiveness intramuscularly and orally on the circulation and with their lack of toxicity in animals, which, however, react definitely to intravenous injection, a method warned against clinically. The authors feel that the local irritating effect of the preservatives may be a possible factor in the clinical benefits derived when these extracts are injected intramuscularly. Their experimental results leave little doubt that these so-called hypotensive extracts are without demonstrable intrinsic therapeutic merit in the dosage and methods of administration recommended. These and similar extracts have not been accepted by the Council on Pharmacy and Chemistry of the American Medical Association.

The results of these investigations are but another demonstration that clinical results, even though apparently beneficial, are not in themselves a definite proof of the effectiveness of the drug employed. The pharmacodynamic effect of a substance can with greater accuracy be demonstrated in properly controlled animal experiments.

PENICILLIN-LIKE SUBSTANCES IN HIGHER PLANTS

Demonstrations of strong bactericidal substances in certain fungi have reopened an older field of botanical investigation, search for predictable bactericidal substances in the tissues of higher plants. Several antibiotics were reported by earlier botanists. Thus, Stickl¹ showed that certain alkaloids extracted from the common celandine were bactericidal against both staphylococci and the anthrax bacillus. Jordanoff² found that extracts of *Capsicum annuum* would kill several plant pathogens. Valette and Liber³ showed that convolvulin is bactericidal for pneumococci. Antiseptic properties have also been reported for raw juices of cabbages, turnips and horse radish.⁴

Systematic search for antibacterial plant extractives was first undertaken in 1942 by Osborn⁵ of the Sir William Dunn School of Pathology, Oxford University. In this search 2,300 different angiosperms (flowering plants) were tested. Selected portions of each plant were ground up by pestle and mortar with sand in a sufficient amount of distilled water to produce a smooth pulp. The pulp was strained through silk and the resulting filtrate tested against both *Staphylococcus aureus* and *Escherichia coli*. To make the tests sterile,

1. Stickl, O.: *Ztschr. f. Hyg. u. Infektionskr.* 108: 566, 1923.
2. Jordanoff, M.: *Jber. Univ. Sofia, Vet. Med. Facultät* 3: 55, 1927.
3. Valette, G., and Liber, A.: *Compt. rend. Soc. de biol.* 125: 352, 1938.
4. Sherman, J. M., and Hodge, H. M.: *J. Bact.* 31: 96, 1936.
5. Osborn, E. M.: *Brit. J. Exper. Path.* 24: 227, 1943.

1. Dreisbach, Robert H.; Van Winkle, Walton, and Hanzlik, P. J.: *Antispasmodic Actions of "Hypotensive" Extracts on Smooth Muscles*, *Arch. Int. Med.* 74: 424 (Dec.) 1944.

filter paper disks about 1 cm. in diameter were dipped into the filtrate and then placed on seeded agar plates. The plates were inoculated at 37 C. for twenty-four hours. The diameter of the zone of complete inhibition of bacterial growth was taken as a rough index of bacteriostatic titer. Inhibition zones 20 mm. in diameter were recorded as 1 plus, 30 mm. in diameter as 2 plus and so on up to a maximum inhibition of 70 mm. in diameter (6 plus).

Out of the 2,300 plant species thus far tested, 134 species gave frankly positive results. Forty-two of these extracts gave 1 plus or 2 plus inhibition with *Staphylococcus aureus* but were completely inactive against *Escherichia coli*. Most of the others gave 2 plus to 6 plus inhibitions with both organisms. Among the most interesting were extracts of the seeds of a number of varieties of cabbage, cauliflower, broccoli or kohlrabi, which gave 2 plus inhibition with both the staphylococcus and *Escherichia coli*. Vegetative parts of the same plants were relatively inactive. The most potent extracts thus far produced have been from numerous species of Ranunculaceae. Seeds of *Clematis recta*, for example, give 6 plus reactions with both *Escherichia coli* and *Staphylococcus aureus*, an in vitro effect apparently superior to that of commercial penicillin.

In testing a given plant it was found desirable to use portions of all available parts—roots, stem, leaf and reproductive organs. In certain cases the bactericidal substance was found to consist of two components, an inactive precursor located in one part of the plant and an activator in another part. The degree of stability of the active substance during wilting and drying varied greatly. Dried material from some species retains full inhibitory power after being kept for one year, while other plants begin to lose the power of inhibition within two days after picking and give negative results when fully dried. Certain well known drug plants, such as *Atropa*, *Datura* and *Digitalis*, show no bacteriostatic properties. Negative results were also noted with most plants currently recommended by herbalists.

Lucas and Lewis⁶ of the State College of Agriculture, Lansing, Mich., have recently confirmed these results. Each plant sample was emulsified in four times its weight of distilled water and then strained through cotton cloth. The resulting filtrate was then tested by the plate method against *Staphylococcus aureus*, *E. coli* and two plant pathogens (*Phytophthora phaseoli* and *Phytophthora campestri*). Among their most interesting findings were detailed studies of extracts from one of the honeysuckles (*Lonicera tartarica*). Extract of the roots was highly active against one plant pathogen (*Phytophthora phaseoli*) and gave 2 plus inhibition of *Staphylococcus aureus* and 1 plus reaction against

E. coli. Extract of the scarlet berries from the same plant was wholly inactive against *Staphylococcus aureus* but gave 4 plus inhibitions with the two plant pathogens and with *E. coli*.

Lucas envisages the application of some of these inexpensive plant extracts to problems of plant pathology and food spoilage, particularly to the prevention of certain seed borne plant diseases not yet controllable. The reported success in the treatment of certain plant diseases with penicillin⁷ forms the basis for this hope. Tests of toxicity and therapeutic efficiency of these inexpensive penicillin substitutes have not yet been made on laboratory animals.

Current Comment

MEDICAL HISTORY OF THE WAR

Elsewhere in this issue (page 527) appears an announcement from the Division of Medical Sciences of the National Research Council relative to the proposed medical history of the war. The committee has decided not to proceed with the development of the history originally contemplated, as was described in an article by Dr. John F. Fulton¹ published in *War Medicine*. The original plan called for the publication of a work giving the overall picture of medicine's contribution to the war effort. This would have included volumes on medicine, surgery, pathology, treatment, the work of the civilian agencies, the Office of Civilian Defense, the Public Health Service, the nurses, industrial medicine, dentistry and similar subjects. Recently the Surgeon General of the United States Army decided to withdraw from participation in such a history; an official release pointed out that the Army Medical Department would prepare its own history of the war and that its materials would not be available for any other historical work until after the Army medical history had been published. Since the preparation of an overall medical history of the war without the inclusion of the Army experience would be essentially like playing "Hamlet" without the participation of the melancholy Dane, the action reported in this issue of *THE JOURNAL* was taken. The complete project has been relinquished. The Bureau of Medicine and Surgery of the Navy and the U. S. Public Health Service will accordingly compile separate histories. The action of the Army Medical Department will no doubt mean that many years will pass before it will be possible to assemble anything resembling a complete picture of the great and coordinated contribution to the war effort made by the medical profession of this country. The decision is the more regrettable since the public is entitled to know what the Army Medical Department, as well as the medical profession at large, has achieved during the war period. Since medicine advances on the basis of recorded experience,

6. Lucas, E. H., and Lewis, R. W. *Science* 100: 597 (Dec. 29) 1944.

7. Brown, J. G., and Boyle, A. M. *Phytopathology* 43: 760, 1944.
1. Fulton, J. F. *Prospectus of a Medical History of the War of 1941 to 19—*, *War Med* 2: 847 (Sept.) 1942.

the War Department by this unfortunate step will seriously hinder the progress of scientific medicine in this country, and it will also deprive the public of something that should be theirs.

BACTEROIDES INFECTIONS

Bacteroides infections are not rare, as shown by the occurrence of 20 cases at the Massachusetts General Hospital during the four year period 1939-1943.¹ Organisms of the *Bacteroides* group are common inhabitants of the mucous membranes, particularly the nasopharynx, the gastrointestinal tract and the cervix and vagina. From these sites they may invade the surrounding tissue to produce localized infections. Localized infections may spread to the body cavities and to the blood with metastatic abscesses involving especially the lungs, pleural cavities, liver and large joints. The genus *Bacteroides* consists of gram negative anaerobic bacilli that do not bear spores. The simple separation of the numerous strains of *Bacteroides* into two groups has clinical value. The *Bacteroides funduliformis* group includes gram negative, strictly anaerobic bacilli, pleomorphic in size and shape. The *Bacteroides fragilis* group comprises small gram negative bacilli regular in size and shape. They are strictly anaerobic. These organisms may be easily overlooked in a routine bacteriologic study. They often require serum or ascitic fluid in the medium to promote growth. The clinical value of the grouping is that the septicemia due to the pleomorphic *Bacteroides funduliformis* group is more severe, with greater tendency to form metastatic abscesses and a higher mortality rate than is the septicemia due to the *Bacteroides fragilis* group. *Bacteroides* septicemias usually follow throat infections, otitis media, surgery or infections of the large bowel and genitourinary tract, or gunshot wounds. Clinically the onset is sudden, with frequent chills and high fever. Jaundice is frequently observed. There is moderate anemia and polymorphonuclear leukocytosis. Pus from local and metastatic abscesses is usually thick greenish yellow, is somewhat foul and contains large numbers of *Bacteroides* organisms. As in other septicemias arising from focal infections producing metastases, treatment consists in the appropriate surgery and supportive measures. Clinical evidence as to the value of the sulfonamides is not conclusive. *Bacteroides* meningitis deserves special mention, as it comprised 5 of the 20 cases at the Massachusetts General Hospital. In 4 of these recovery occurred, whereas previously all cases reported in the literature had terminated fatally. In smears of spinal fluid the gram negative bacilli were intracellular or extracellular. They could be mistaken for influenza bacilli. Repeated anaerobic cultures were made and the *Bacteroides* organisms identified. Early and adequate spinal drainage, repeated lumbar punctures, the use of intravenous fluids and transfusions appeared to be major factors in recovery. In 1 case, however, sulfadiazine caused a prompt improvement each time when administered for three separate episodes of meningitis.

1. Smith, William E., and Ropes, Marian W.: *Bacteroides* Infections, *New England J. Med.* 232: 31 (Jan. 11) 1945.

RENAL COMPLICATIONS IN SULFONAMIDE THERAPY

Renal complications continue to be reported in sulfonamide therapy in spite of the use of improved forms of the drug. Observations by Prien¹ on 2 cases of sulfathiazole anuria and uremia confirm the opinion of Long and his associates² that the sulfonamides can cause a true toxic injury to the kidney tubules independent of any tubular obstruction by sulfonamide crystals. Kidney tissue removed at biopsy (2 cases) and fresh kidney tissue obtained post mortem (1 case) were prepared with special technic to prevent the loss of any crystals. Only focal tubular degeneration was observed microscopically. Crystals or concretions were not seen microscopically or grossly anywhere in the urinary tract in the 1 case examined post mortem. In these 2 cases pathologic and clinical evidence indicated neither that sulfonamide crystals were present and washed out of the kidney before the tissues were taken for study nor that the kidney changes were of a non-specific nature and due to the disease under treatment. Prien suggests a primary chemotoxic cause for the focal lesions in the kidneys. He considers a low urinary output as the most important factor in the causation of kidney complications, but the relationship between cause and effect is not clear. Recovery in 1 case occurred apparently as a result of polyuria following decapsulation: the biopsy specimen removed at the time of decapsulation, however, showed the involved tubules to be in an almost healed stage. In the mechanism of the obstructive type of sulfonamide anuria two physical conditions are of importance. The slowing of the urine stream where the collecting tubule enters the calix tends to cause the sulfonamide crystals (first formed in the convoluted tubules) to separate out, building up a "delta of crystals" in the calix. The tubules then fill with crystals in a retrograde manner. There were rarely crystals in the collecting tubules or at a higher level unless the terminal portions of these tubules also were filled. The affinity of crystals for one another led to the formation of concretions in stagnant urine with subsequent blocking of the urinary tract.

ANESTHESIA STUDY COMMISSIONS

On page 514 of this issue appears a paper presented before the Section on Anesthesiology at the Chicago session of the American Medical Association. Following the reading of that paper and at the same session the House of Delegates adopted a resolution urging the formation of anesthesia study commissions within the state, county and other medical societies similar to that described. The need for such study is particularly acute because of the large number of new anesthetic drugs and methods introduced to the profession during recent years and consequently for the more rapid and accurate evaluation of these new anesthetic methods and practices.

1. Prien, E. L.: The Mechanism of Renal Complications in Sulfonamide Therapy, *New England J. Med.* 232: 63, 1945.

2. Long, P. H., Haviland, P. W., Edwards, Lydia B., and Prier, Eleanor A.: The Toxic Manifestations of Sulfanilamide and Its Derivatives, *J. A. M. A.* 115: 364 (Aug. 3) 1940.

MEDICINE AND THE WAR

ARMY

AIR EVACUATION BY THE AAF

An estimated 700,000 sick and wounded patients of the American and Allied forces have been transported by the Army Air Forces in all theaters of operations since air evacuation became a military necessity in 1942, it was announced by Major Gen. David N. W. Grant, the Air Surgeon. More than 525,000, or 75 per cent, of this total were transported in 1944, with the Ninth and Twelfth Air Forces carrying the larger part of the increased traffic as the result of the offensive in western Europe.

Approximately 57 per cent of the 1944 total has been Army Ground Forces and Army Service Forces personnel, 28 per cent British and other Allies, 5 per cent Navy and Marines, 7 per cent Army Air Forces and 3 per cent prisoners of war and civilians. Thus all arms and services have benefited both in health and in morale by the Air Surgeon's recommendation in 1942 that unarmed cargo airplanes be equipped with removable litter supports and be staffed by flight nurses and enlisted technicians to provide a method for the quick, safe and comfortable evacuation of casualties. The medical risk involved may be observed from the extremely low death rate in flight of 7 per hundred thousand patient trips. This record has been achieved despite the large number of critically wounded evacuated from Burma, France, Italy and the Central Pacific.

The great majority of the total patients have been flown from forward areas to base hospitals in theaters of operations, where Troop Carrier Command aircraft often have been the only practical means for safe and rapid evacuation of casualties on a mass scale. At the same time the number of patients evacuated by the Air Transport Command from the theaters into the United States increased nearly 1,000 per cent. The 1943 total was approximately 3,000 compared to an estimated 30,000 for 1944. ATC air evacuation from ports of debarkation to army general hospitals in the interior increased in similar proportions after the introduction of this method of relieving debarkation hospitals and hospital trains early in 1944.

The first known plan to transport patients by airplane was proposed by Capt. George H. R. Gosman, M. C., Army Medical Corps, and Lieut. A. L. Rhoades, Coast Artillery Corps, in 1910, after they had built an airplane at Fort Barrancas, Fla. Credit for the air evacuation of the first patient in the United States probably belongs, however, to Major Nelson E. Driver, Medical Corps, and Capt. William C. Ocker, Air Service, who in 1918 converted a JN-4 airplane into an airplane ambulance at Gerstner Field, Lake Charles, La.

While light airplanes were used extensively for the transportation of the sick and injured prior to World War II, the first mass air evacuation in American military transport airplanes probably occurred in Java and Burma in March 1942. In Burma, ten C-47s of the Army Air Forces evacuated 1,900 sick and wounded soldiers and civilians from Myitkyina to Dinjan in one ten day period of April 1942. Twenty-four litters were roped in tiers in each airplane, but the greatest number evacuated in any one airplane, counting the ambulatory, was 74.

On the basis of recommendations made in 1940 by the chief of the Medical Division, Office, Chief of the Air Corps (now the Air Surgeon, Hq, AAF), the War Department authorized the Medical Air Ambulance Squadron table of organization on Nov. 19, 1941. The medical personnel, including flight surgeons, flight nurses and enlisted technicians, were activated for the first air ambulance unit at Fort Benning, Georgia, in May 1942. Owing to the shortage of airplanes and the pressing need for transport airplanes capable of mass patient movement, the Air Surgeon then recommended that troop and cargo airplanes be utilized on return trips from the front for the secondary mission

of casualty evacuation, thus abandoning the concept of a single purpose air ambulance. In October 1942 the airplane ambulance unit was moved from Fort Benning to Bowman Field, Kentucky, and directed to train medical air evacuation transport squadrons for the care of patients in flight. The training group was subsequently designated as the AAF School of Air Evacuation.

Meanwhile mass air evacuation had become a military necessity in the New Guinea and Solomon Island counteroffensives beginning in August 1942. Flight surgeons were directed to improvise air evacuation service from available medical personnel in tactical units, and this was done with great success. Air evacuation in New Guinea was carried out by the Fifth Air Force and in the Solomons by the South Pacific Combat Air Transport Command comprised of Navy, Marine and Thirteenth Air Force units.

The first two medical air evacuation transport squadrons were activated at Bowman Field in December 1942 and entered service overseas in February 1943, one with the Thirteenth Air Force and the other with the Twelfth Air Force in North Africa. Since that time the AAF School of Air Evacuation, which became the Air Evacuation Section of the AAF School of Aviation Medicine at Randolph Field, Texas, in October 1944, has trained thirty-one squadrons. The number of flight nurses trained totals approximately 1,220, including several hundred who were not placed on, or are no longer on, flying duty. Nurses of the United States Navy and foreign governments have attended the school.

Approximately ten flight nurses have been killed in air evacuation service, seven in aircraft and three in jeep accidents. A comparable number of medical flight technicians have been lost. A large number of AAF air evacuation personnel have been cited for distinguished or meritorious achievement either as individuals or as units.

As an indication of the theater recognition of air evacuation, Major Gen. Paul R. Hawley, chief surgeon of ETO, commended Major Gen. Paul L. Williams, commanding general, Ninth Troop Carrier Command, on Sept. 28, 1944 as follows for a special assignment of airplanes to evacuation:

I want to thank you personally, and in the name of thousands of wounded American soldiers, for the great help you have given the medical service through this campaign, but particularly during the past ten days.

One week ago there were more than 7,000 wounded American soldiers awaiting evacuation from the First and Third armies. The withdrawal of air lift for airborne operations had thrown the entire load on ground transport, which could not cope with the situation. . . . You [have] saved many lives and prevented an enormous amount of suffering during this emergency.

24TH GENERAL HOSPITAL AWARDED FIFTH PLAQUE

The 24th General Hospital, created in New Orleans by Tulane University of Louisiana School of Medicine, was recently awarded the fifth Army Plaque and Clasp for exceptionally meritorious performance of duty in the Italian war theater. According to the citation accompanying the award, "this organization provided superior medical attention to thousands of Fifth Army troops. The 24th General Hospital maintained highest standards of professional treatment despite heavy emergency demands which were made repeatedly. The noteworthy accomplishment of this hospital reflects the high traditions of the Medical Corps of the United States Army." The hospital unit is commanded by Colonel Walter C. Royals, formerly of New Orleans, who graduated from Tulane University of Louisiana School of Medicine in 1917. Most officers of the unit are former faculty members or graduates of Tulane, and the majority of its nurses formerly practiced at either Charity Hospital, New Orleans, or Touro Infirmary in the same city.

ARMY RETAINS GENERAL MARIETTA

Major Gen. Shelley U. Marietta, who recently reached the statutory retiring age, will be retained by the Army as commanding general of Walter Reed General Hospital, Washington, D. C. When General Marietta was assigned to Walter Reed Hospital in 1939 there were available only 1,200 beds; now there are 3,502. His insistence on the latest modern equipment has made Walter Reed probably the best equipped hospital in the United States, if not in the world. General Marietta graduated from the University of Illinois College of Medicine, Chicago, in 1909. He received a reserve appointment in the Army in 1910, and two years later he was commissioned in the Regular Army and graduated from the Army Medical School, Washington, D. C.

ARMY NURSES GIVEN COURSES IN ANESTHESIA

A number of nurses with the 280th Station Hospital in France have been taking courses in anesthesia. Lectures and demonstrations have been given by Major Joseph Dusard, Bedford, Ind., of the surgical staff, and 1st Lieut. Bernice Boman, chief nurse of the operating room, which cover every aspect of the subject. Among the topics covered in the course are the use of the various anesthetic preparations and their actions: ether, gas-oxygen, gas-oxygen-ether, sodium pentothal and spinal anesthetics, position of patients on the operating table, preanesthetic care, shock, and the anatomy and physiology of circulation and respiration. Special technics are studied in detail.

FLIGHT NURSES GRADUATE

Twenty-three officers of the Army Nurse Corps recently graduated as "flight nurses" from the Army Air Forces School of Aviation Medicine, Randolph Field, Texas. The course for flight nurses extends over a period of nine weeks, which is divided into three phases of three weeks each. The first phase is a review of various medical and military subjects required of all medical personnel. The second phase is concerned with material peculiar to air evacuation and the third phase is occupied by actual evacuation flights within the zone of the interior.

RED CROSS BUTTON

The Red Cross button which was worn by Miss Clara Barton, founder of the American Red Cross, has been conferred by Former President Herbert Hoover on Col. Florence A. Blanchfield, chief of the Army Nurse Corps. The button, which was found among the possessions of the late Mrs. Hoover, was presented to Colonel Blanchfield at a recent meeting of the National Nursing Council in New York, in accordance with Mrs. Hoover's expressed wish and believing that the button should be the property of the head of the Nurse Corps which looks after the wounded and sick in uniform.

FIRST PHYSICIAN TO REACH LEYTE

Lieut. Herbert Karol, formerly of Chicago, was recently reported to have been the first American physician to arrive on the island of Leyte during the American invasion. He was awarded a citation for caring for the wounded on shipboard during the invasion, during heavy bombing attacks. Dr. Karol graduated from the University of Illinois College of Medicine, Chicago, in 1942 and entered the service Aug. 1, 1943.

PROMOTIONS IN THE ARMY MEDICAL DEPARTMENT

The following promotions to the rank of brigadier general (temporary) were recently announced by the War Department:

Col. Charles B. Spruit, Carlisle Barracks, Pennsylvania.
Col. William A. Hagins, Oliver, Ga.
Col. Robert C. McDonald, Washington, D. C.

ARMY AWARDS AND COMMENDATIONS

Major John A. Growdon

Major John A. Growdon, formerly of Kansas City, Mo., was recently awarded the Bronze Star "for meritorious service in connection with military operations against the enemy as General Surgeon, 3d Auxiliary Surgical Group, from June 7, 1944 to Nov. 21, 1944 in France, Belgium and the Netherlands. Major Growdon performed surgical operations two hours after wading ashore on June 7, 1944 and continued his skillful medical pursuits throughout the entire night despite numerous difficulties. Since his arrival on the continent, Major Growdon has administered his duties in an outstanding manner, thus reflecting credit on himself and the military service." Dr. Growdon graduated from Washington University School of Medicine, St. Louis, in 1935 and entered the service in August 1942.

Captain John R. Matthew

The Bronze Star was recently awarded to Capt. John R. Matthew, formerly of Knox, Ind., for "meritorious service in connection with military operations against an enemy of the United States, in France, from July 15 to Sept. 17, 1944." A censored report from headquarters in France stated that this was the period when his infantry was engaged constantly with the enemy and that Captain Matthew worked constantly, skillfully ministering to injured soldiers and enabling many men to return to further service. Dr. Matthew graduated from Indiana University School of Medicine, Indianapolis, in 1933 and entered the service May 2, 1942.

Lieutenant Colonel John V. Belmonte

The Silver Star was recently awarded to Lieut. Col. John V. Belmonte, formerly of Chicago, for performing a successful field operation at night with only a flashlight for illumination. Commander of the American Division's medical battalion, he voluntarily accompanied infantry assault troops in an advance against enemy positions to perform the operation under enemy fire. Dr. Belmonte graduated from Loyola University School of Medicine, Chicago, in 1932 and entered the service March 5, 1941.

Captain Henry Clay Robertson Jr.

Capt. Henry Clay Robertson Jr., formerly of Charleston, S. C., was recently awarded the Oak Leaf Cluster in Germany for meritorious conduct on the field of battle. It was indicated that this was during action in the Hurtgen Forest early in December. Dr. Robertson had already been awarded the Bronze Star (*THE JOURNAL*, Feb. 3, 1945, p. 281) in October during the Brittany campaign. He graduated from the Medical College of the State of South Carolina, Charleston, in 1935 and entered the service July 23, 1942.

Major Patrick H. Hoey

Major Patrick H. Hoey, formerly of Scarsdale, N. Y., was recently awarded the Bronze Star for "meritorious achievement in the performance of outstanding services" at a B-24 Liberator heavy bomber station in England, where he is group flight surgeon. Dr. Hoey graduated from Tufts College Medical School, Boston, in 1935 and entered the service Oct. 15, 1940.

Colonel Harry G. Armstrong

The Legion of Merit was recently awarded to Col. Harry G. Armstrong, formerly of Washington, D. C., for exceptionally meritorious conduct in the performance of outstanding services from Sept. 8, 1939 to June 20, 1941. Dr. Armstrong graduated from the University of Louisville School of Medicine in 1925 and entered the service Feb. 24, 1930.

Major Edgar Ross Kyger Jr.

Major Edgar Ross Kyger Jr., formerly of Kansas City, Mo., and now executive officer of a medical unit in Belgium, was recently awarded the Bronze Star for meritorious service. Dr. Kyger graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1936 and entered the service July 1, 1942.

NAVY

U. S. S. HIGBEE COMMISSIONED

For the first time in history the U. S. Navy has placed in commission a vessel named in honor of a navy nurse. The ceremony took place at Boston Navy Yard February 1, when the U. S. S. *Higbee* was commissioned. Launched at Bath, Maine, Nov. 12, 1944, the ship was christened in honor of Mrs. Higbee, second superintendent of the U. S. Navy Nurse Corps (1911-1922), one of four women to receive the Navy Cross and the only woman to receive it during her lifetime. The citation for her World War I service reads "for distinguished service in the line of her profession, and unusual and conspicuous devotion to duty as superintendent of the Navy Nurse Corps."

NEW APPOINTMENT

Capt. Waltman Walters, formerly of the Mayo Clinic, Rochester, Minn., who recently returned from a tour of duty in the South Pacific area, has been appointed chief of surgery for the U. S. Naval Hospital at Philadelphia. Dr. Walters graduated from Rush Medical College, Chicago, in 1920 and entered the service July 1, 1942.

LIEUTENANT BELTON ALLEN BENNETT JR. MISSING IN ACTION

Lieut. Belton Allen Bennett Jr., formerly of Bethlehem, Pa., has been reported missing in action. Dr. Bennett graduated from the University of Virginia Department of Medicine, Charlottesville, in 1938. He left Bethlehem in September 1943 for active service in the U. S. Naval Reserve and was later assigned to a destroyer.

NAVY AWARDS AND COMMENDATIONS

Lieutenant Virgil Duncan Shepard

Lieut. Virgil D. Shepard, formerly of Rochester, Minn., was recently awarded the Silver Star Medal "for conspicuous gallantry and intrepidity as surgeon attached to C Company, Third Medical Battalion, Third Marine Division, during action against enemy Japanese forces in the Solomon Islands area from Nov. 1 to Nov. 26, 1943. Within twenty-four hours after our forces landed on Bougainville Island Lieutenant (then Lieutenant, Junior Grade) Shepard skillfully performed many major surgical operations despite hostile air attacks and a constant barrage of machine gun and mortar fire. Working with brilliant initiative and cool courage throughout numerous hazardous engagements, he ministered untiringly to marine wounded, often forced to operate by lantern light during hours of darkness and on one occasion with shell fragments flying through the hospital tent. Lieutenant Shepard's great personal valor and unswerving devotion to duty inspired his comrades to carry on despite extreme peril, and his outstanding professional ability contributed to the saving of many lives which otherwise might have been lost." Dr. Shepard graduated from the University of Michigan Medical School, Ann Arbor, in 1936 and entered the service Oct. 12, 1942.

Lieutenant Commander Edward C. Klein Jr.

Lieut. Comdr. Edward Caffron Klein Jr., formerly of East Orange, N. J., was recently awarded the Legion of Merit aboard the flagship of Rear Admiral Daniel Barbey for prolonging the life of a dying Japanese prisoner. Dr. Klein graduated from Columbia University College of Physicians and Surgeons, New York, in 1923 and entered the service July 1, 1944.

MISCELLANEOUS

WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

California

U. S. Naval Hospital, Corona, Calif.: Comparison of Protozoal and Bacterial Dysenteries, Dr. John Kessell, March 22.

A. A. F. Regional Hospital, Santa Ana Air Base, Santa Ana, Calif.: Plastic Surgery, Lieut. Comdr. G. H. Gray and Dr. William S. Kiskadden, March 20.

Station Hospital, March Field and Regional Hospital, Camp Haan, Riverside, Calif.: Psychosomatic Medicine, Dr. Henry Douglas Eaton, March 20.

Torrey General Hospital, Palm Springs, Calif.: Penicillin: Recent Developments in Surgical and Public Health Antiseptics, Dr. Frederick Moore, March 20.

U. S. Naval Hospital, Long Beach, Calif.: Diabetes, Drs. J. W. Sherrill and Howard F. West, March 17.

U. S. Naval Hospital, Santa Margarita Ranch, Oceanside, Calif.: Blood Plasma and Substitutes: Water Balance, Lieut. Col. R. N. Jones and Major Edward Schwartz, March 8; Thoracic Surgery, Dr. John Jones and Lieut. Comdr. J. E. Dailey, March 22.

Station Hospital, Camp Stoneman, Pittsburg, Calif.: Infectious Diseases, Dr. Henry D. Brainerd, March 10; The Clinical Aspects of Allergy, Dr. Albert H. Rose, March 17.

Pennsylvania

U. S. Naval Hospital, Philadelphia: Surgical Technique in Acute Appendicitis, Dr. George Muller, March 23.

Virginia

Station Hospital, Fort Belvoir, Virginia: General Principles of Plastic Surgery, Dr. Robert E. Moran, March 12; Seasonal Hay Fever, Dr. Grafton Tyler Brown, March 26.

West Virginia

Ashford General Hospital, White Sulphur Springs, W. Va.: Clinic in Orthopedic Surgery, Dr. Custis Lee Hall, March 10.

NATIONAL RESEARCH COUNCIL'S PROJECTED MEDICAL HISTORY OF THE WAR

The comprehensive Medical History of the War, planned under the auspices of the National Research Council as announced in *War Medicine* for September 1942, cannot now be undertaken. The Office of the Surgeon General of the Army published the following statement in the *Bulletin of the U. S. Army Medical Department* for October 1944: "Although the Surgeon General appreciates very much the unselfish interest and efforts of the many patriotic physicians and scientists in the development of the National Research Council program, he has expressed the opinion that it should be radically revised to eliminate all accounts of Medical Department activities in this war, until such experience has been published in the official (War Department) history."

Since it would be impossible at this time to prepare an adequate, well rounded history without access to army material, the council now proposes to limit its medical history to a record of the activities of the Division of Medical Sciences during the war period. Plans for the division's history have been formulated and are being developed by the subcommittee on historical records acting through the division's committee on information.

The various services and agencies which had expected to participate in the history have been notified of the council's decision, and the majority of them plan to draft their own histories independently.

U. S. TYPHUS AGENCY ESTABLISHED AT BELGRADE

A U. S. typhus commission has been established at Belgrade at the invitation of Marshal Josip Broz-Tito. The commission will be headed by Brig. Gen. Leo A. Fox, who said that though there was no typhus epidemic in Yugoslavia there was definite incidence, especially in Bosnia.

ORGANIZATION SECTION

Council on Medical Service and Public Relations

REGIONAL CONFERENCES DISCUSS MEDICAL PROBLEMS

A series of regional conferences are being held by the new Council on Medical Service and Public Relations of the American Medical Association. Four of these conferences already have been held in Cincinnati, Washington, Kansas City and Atlanta, with three more scheduled for April on the Pacific Coast and in the other Western states.

Originally these conferences were designed to be fact finding rather than fact giving. They have developed into orientation courses for the attending physicians, state society officers, members of the Board of Trustees who have been present and most of all for the members of the Council themselves. Similar programs have been arranged for each conference, but each meeting has developed its own pattern of pertinent and pointed discussion.

CINCINNATI CONFERENCE

At Cincinnati where the conference was held for the Ohio, Kentucky, Indiana and West Virginia physicians on Oct. 29, 1944, principal interest centered around prepayment medical service plans. This conference, the first formal one to be held by the Council following an informal meeting for the New England states at Boston passed a resolution stating:

There should be advice and help coming from a central location to the state societies and the county societies having to do with their activities and solutions pertaining to medical practice.

This conference was attended by some ninety physicians. Dr. Edward J. McCormick of Toledo, Ohio, vice chairman of the Council, presided while three members of the Board of Trustees, Dr. James Bloss, Huntington, W. Va., Dr. E. L. Henderson, Louisville, Ky., and Dr. R. L. Sensenich, South Bend, Ind., were present. Among the speakers were Mr. J. W. Holloway, Jr., then acting secretary of the Council, who spoke on the activities of the Council and Dr. Joseph S. Lawrence, director of the Washington Office of the Council, who told of his work in Washington. Discussion from the floor was led by Dr. L. Howard Schriver, the president of the Ohio State Medical Association, who spoke of the need for interstate cooperation as a solution for the stream pollution program particularly affecting the states bordering on the Ohio River—Ohio, Indiana and Kentucky. He also talked of the necessity for doctors to be "positive" and not "passive" in their approach to problems of medical economics and education. Dr. R. E. S. Young of Columbus, Ohio, discussed the possible pitfalls of medical service plans. Mr. Charles Nelson, executive secretary of the Ohio State Medical Society, related the action taken by the council of the Ohio State Medical Society recommending the creation of an insurance company to write health insurance on a cash indemnity basis. He explained that this company would be operated by members of the Ohio State Medical Association but would be entirely separate from the association. Dr. N. K. Foster, Hammond, Ind., president of the Indiana State Medical Association and Dr. O. O. Howard, chairman of the Study Committee on Prepayment Insurance of the Indiana State Medical Association, and Dr. A. M. Mitchell of Terre Haute discussed the action of the house of delegates of that association in regard to the establishment of a prepayment medical service plan in Indiana. Representatives from West Virginia reported that a permissive act was passed several years ago by the West Virginia legislature giving the West Virginia State Medical Society the right to sponsor nonprofit prepayment insurance plans in that state. Insurance plans are being established in accord with the act, and a rapid expansion of the program throughout the state is anticipated.

Dr. Philip E. Blackerby, secretary of the Kentucky State Medical Association stated that the Kentucky profession is

somewhat confused in regard to the problem of health insurance and asks that the Council formulate a basic program to be translated into state programs.

Among those who took part in the discussion were Dr. Walter E. Vest, Huntington, W. Va., editor of the *Journal of the West Virginia State Medical Association*, Dr. Jonathan Foreman, Columbus, Ohio, editor of the *Journal of the Ohio State Medical Association*, Dr. A. A. Brindley, Toledo, Ohio, Dr. Barney J. Hein, Toledo, Ohio, Dr. Cecil Striker, Cincinnati, Dr. John M. Van Dyke, Canton, Ohio, Dr. Robert C. Rothenberg, Cincinnati, chairman of Medical Service Plans, and Dr. J. B. Lukins, Louisville, Ky.

WASHINGTON CONFERENCE

Some fifty physicians representing Pennsylvania, New York, Delaware, the District of Columbia, Maryland, New Jersey and Virginia held a session in connection with the regular meeting of the Council in Washington, D. C., on December 6. Following the session newspaper statements prepared by Dr. John H. Fitzgibbon, Portland, Ore., chairman of the Council, and Dr. Louis H. Bauer, Hempstead, N. Y., member of the Board of Trustees and former chairman of the Council, were released emphasizing the following seven point program:

- 1 Continued expansion of the practice of medicine with full development of approved voluntary hospital, medical, indemnity, industrial and commercial insurance against the costs of medical care.

- 2 Development of public health facilities for preventive medicine all over the country.

- 3 Development of adequate diagnostic facilities wherever possible.

- 4 The use of the voluntary insurance principle in caring for the indigent and medically indigent.

- 5 The development of hospital facilities where present facilities are used to the utmost and are still inadequate.

- 6 The use of federal funds to aid communities in public health measures, care of the indigent and construction of necessary hospitals, when local communities are unable to finance the projects, but with retention of local administration.

- 7 The creation of an agency of the federal government for coordinating and administering medical health functions of the federal government exclusive of the Army and Navy.

The morning session was devoted to explanatory remarks from representatives at A. M. A. Headquarters, among them being Dr. Carl Peterson, Secretary of the Council on Industrial Health, Mr. J. W. Holloway, Jr., Director of the Bureau of Legal Medicine and Legislation, and Lieut. Col. H. C. Lueck, Liaison Officer, Procurement and Assignment. In addition to Dr. Fitzgibbon and Dr. Bauer, other Council members who attended the meeting were Dr. Alfred W. Adson, Rochester, Minn., Dr. E. J. McCormick, Toledo, Ohio, Dr. James R. McVay, Kansas City, Mo., Dr. Thomas A. McGoldrick, Brooklyn, Dr. W. S. Leathers, Nashville, Tenn. and Dr. James L. Paullin, Atlanta, Ga.

Prepayment medical insurance plans again were the principal subject of the discussion during the afternoon. Dr. Walter Donaldson, Pittsburgh, presented a statement by the Pennsylvania Medical Society asking that the principles for prepayment medical insurance plans laid down by the American Medical Association specifically endorse service plans as well as cash indemnity or reimbursement plans. Dr. Fitzgibbon stated that it was his understanding that the principles not only included service plans but recommended and encouraged the experimentation and initiation of voluntary prepayment insurance plans by local state and county groups. Louis Reed, United States Public Health Service, gave an analysis on various plans and stated that more and more the plans were merging into combination service indemnity plans.

KANSAS CITY CONFERENCE

Dr. James R. McVay presided at the third meeting held in Kansas City on December 17, which was attended by representatives of the South Central group of states including Arkansas

Colorado, Illinois, Kansas, Missouri, Oklahoma and Texas. It was unfortunate that transportation difficulties and conflicting local state medical societies kept representatives from other states in that section from attending this meeting. It is hoped that states which did not attend the conference will be able to attend one of the series of meetings scheduled on the West Coast in April. Talks by representatives of the American Medical Association included a discussion by Dr. F. H. Arestad, who had not spoken at the other conferences. Dr. Arestad told how the Council on Medical Education and Hospitals is integrating its work with the Bureau of Information, which is giving special consideration to the problems that will face medical officers following their release from service in the armed forces. Dr. R. B. Anderson, Fort Worth, Texas, in speaking as a representative of Texas, reminded the group that the "Shoulders plan," which had been given unanimous endorsement by the House of Delegates of the American Medical Association and the American Legion following World War I, should be again brought into light. He told of the provisions of this program to provide locally for veterans rather than nationally. Dr. Anderson urged reconsideration of this plan as an answer to the problem of caring for veterans. Dr. Barrett A. Nelson, Manhattan, Kan., discussed some of the problems Kansas is facing in drawing up a bill for presentation to the Kansas legislature for enactment. Dr. Ira H. Lockwood, Kansas City, president of Surgical Care, Inc., and for many years a member of the Medical Economics Committee of the Missouri State Medical Association, spoke of the principles of Surgical Care, Inc., and how it is working in Missouri.

An abstract of the Atlanta meeting will appear in an early issue of THE JOURNAL.

Washington Letter

(From a Special Correspondent)

Feb. 26, 1945.

Hill-Burton Hospital Bill Hearings Held

Hearings on the Hill-Burton Hospital Construction bill (S. 191) commenced today under the chairmanship of Senator James E. Murray of Montana, chairman of the Committee on Education and Labor. Following a recommendation made in January by the Pepper Committee on Wartime Health and Education, the bill authorizes a system of federal aid and grants to states or through the states to other public and nonprofit agencies for hospital planning and construction. The sum of \$105,000,000 would be allocated among states for the next fiscal year on the basis of population and financial need. Federal contribution would vary from 25 to 75 per cent. An additional \$5,000,000 would be distributed among the states for surveys and plans. Witnesses heard today were Dr. Donald C. Smelzer, president, American Hospital Association, Philadelphia; Rev. Alphonse M. Schwitalla, S.J., Catholic Hospital Association, St. Louis; Rev. John G. Martin, president, American Protestant Hospital Association, Newark, N. J.; Dr. Ernst P. Boas, New York. Later witnesses to be heard are, for February 27, Dr. Reginald Atwater, executive secretary, American Public Health Association, New York; Dr. George S. Stephenson, National Commission on Mental Hygiene, New York; Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, and Dr. Martha Eliot, Children's Bureau, U. S. Department of Labor, Washington, D. C.; and, for February 28, Dr. R. L. Sensenich, Board of Trustees, American Medical Association, Chicago; Dr. Victor Johnson, Secretary, Council on Medical Education and Hospitals, American Medical Association; Joseph Fichter, master, Ohio State Grange, Columbus, Ohio, and Dr. A. Rand, Washington, D. C.

Medical Members of New Research Board for National Security

The medical profession is well represented on the new Research Board for National Security, which will extend into peacetime the wartime research conducted by the temporary Office of Scientific Research and Development. Dr. Vannevar Bush of the Carnegie Institution of Washington, and now director of OSRD, has declined an invitation to become a

member of the new committee, stating that he did not wish to appear to dominate the new organization. The committee is formulating programs of scientific research and development to strengthen national security. Its appointment results from a report of the Congressional Committee on Postwar Research and Development, headed by Charles E. Wilson. Chairman of the Research Board for National Security is Dr. Karl T. Compton, president, Massachusetts Institute of Technology, and among the four executive committeemen are Dr. A. R. Dochez, professor of experimental medicine and surgery, College of Columbia University Physicians and Surgeons, and Dr. Roger Adams, head of the chemistry department, University of Illinois. Among members of the research committee are Dr. H. S. Gasser, director, Rockefeller Institute for Medical Research; Dr. A. Baird Hastings, professor of biochemistry, Harvard University; Dr. W. S. Hunter, professor of psychology, Brown University, and chief, Applied Psychology Panel, National Defense Research Committee; Dr. Lewis H. Weed, director, Johns Hopkins University School of Medicine, and chairman, Division of Medical Sciences, National Research Council; Major Gen. Norman T. Kirk, Surgeon General of the Army, and Vice Admiral Ross T. McIntire, chief, Bureau of Medicine and Surgery, U. S. Navy.

Expansion of Health Facilities Urged for Postwar Period

Great expansion and development of present health facilities and programs is required to meet the health needs of the 15,000,000 returning veterans of this war, according to an interim report on Health Needs of Veterans, announced today by Senator Claude Pepper's Senate Subcommittee on Wartime Health and Education. Further studies will be made on the quality of medical care being provided for American war veterans with a view to making concrete recommendations. "The men and women in the services," said Senator Pepper, "have become accustomed to the best in medical and hospital care, and they will not be satisfied with anything less than the best when they return to civilian life." Continued investigations will be made with the help of medical authorities, veterans' organizations and professional health groups. The interim report was signed by all five members of the subcommittee: James M. Tunnell, Democrat, Delaware; Elbert D. Thomas, Democrat, Utah; Robert M. LaFollette Jr., Progressive, Wisconsin; H. Alexander Smith, Republican, New Jersey, and Chairman Pepper, Florida.

Physicians of Maryland and of the District of Columbia May Compose Differences.

A joint committee of both houses of the Maryland legislature has asked the Maryland Board of Medical Examiners to reconsider its ban on borderline certificates to allow District doctors to practice across the Maryland state line. Dr. George C. Ruhland, health officer of the District of Columbia, and Theodore Wiprud, secretary of the District of Columbia Medical Society, appeared before the legislative committee. Three months ago the Maryland board rescinded a reciprocity agreement under which certificates had been issued Washington and Maryland doctors for the past sixteen years. Since the \$1 certificates were discontinued, District doctors wishing to attend patients in Maryland have been forced to obtain a \$50 Maryland license and pass the state examination. District officials say a favorable response to their pleas for reissuance of the certificates is expected.

Four Hundred and Fifty UNRRA Teams Requested by General Eisenhower

General Eisenhower, Supreme Allied Commander, has requested that 450 United Nations Relief and Rehabilitation Administration teams consisting of 10 men each be appointed on a stand-by basis, to be ready for the defeat of Germany. Meantime international organization is proceeding, Director General Herbert H. Lehman announcing the appointment of Rolf Nugent as deputy chief of UNRRA's Yugoslav mission.

Official Washington is studying reports from London of criticism of UNRRA for reported failure to get relief work under way on a larger scale. Chief difficulty has been said to be in lack of understanding between UNRRA and the Army.

EXPANSION OF MATERNAL AND CHILD HEALTH AND CRIPPLED CHILDREN'S PROGRAMS

Recommendations Adopted by the Steering Committee on Health Services Advisory to the Children's Bureau, U. S. Department of Labor, Washington, D. C., January 28

There is ample evidence that urgent need exists for a widespread expansion of local, state and federal programs to assure the accessibility of health and medical services to all mothers and children. Though great progress has been made during the nine years the Social Security Act has been in operation, the coverage of the country with health services for mothers and children is far from complete and the facilities and personnel to provide a high quality of service and care are still very inadequate. Though evident reduction has occurred in infant and maternal mortality and in the incidence of certain diseases, workers familiar with the problem know that the improvement has varied greatly in different areas and that generally it has taken place in direct proportion to the amount and kind of service and facilities made available. It is well known that in many parts of the country mortality and morbidity rates are far greater than the "average." The rejection rates for selective service have high-lighted what has long been known, but to some extent disregarded, namely that a large proportion of the nation's children are not reaching maturity as physically and mentally fit as is consistent with the knowledge and potential resources available in this country. That more than one in every four of our 18 year old boys who come up before Selective Service is rejected as physically or mentally unfit for general military service is indeed shocking.

Many children today do not receive preventive and curative care compatible in amount or in quality with the present day standards of good pediatric service; many mothers do not receive the kind of obstetric care that is recognized as the best. The reasons that mothers and children do not receive this service are that (1) such services and facilities are not distributed widely but are concentrated to a great extent in the larger urban centers, (2) many families are unable to pay for service even when it is available in the community and (3) neither the provision of medical care nor the education of parents on how to use facilities has kept pace with scientific knowledge.

It is essential, therefore, that all necessary services—preventive, diagnostic and curative—be made available to all mothers and children as rapidly as possible. It is equally essential that such services be of high quality and that they be designed to meet the needs of mothers and children as individuals.

Though extensive expansion is not possible during the war period because of lack of personnel, this period can be used for planning for the training of key personnel, for exploring ways and means to make fuller use of existing personnel and resources and to extend and improve services and facilities, and for starting demonstrations of different kinds of services that will serve as "pilot" projects for postwar expansion. This would make it possible for the program to go forward as rapidly as personnel and facilities become available.

As a basis for action it is necessary to gather data on personnel and facilities for health service and medical care for mothers and children, state by state, to bring into focus local needs. Such state reviews of resources and needs can serve

both as supporting evidence for national planning and as specific guides to state and local administrative bodies.

To consider ways and means of meeting these needs, the Children's Bureau advisory committees concerned with maternal and child health and crippled children's services met in December 1944 and made full recommendations to the Children's Bureau.

To bring these recommendations together and point them up for specific action, the chairmen of the committees and subcommittees (or their representatives) met as a special Steering Committee on Health Services on January 28 at the Children's Bureau.

The Steering Committee on Health Services urges the Children's Bureau to take the steps necessary to implement these recommendations.

The recommendations are as follows:

1. *Increase in Federal Grants to States for Maternal and Child Health and Crippled Children's Services.*—The Children's Bureau should seek at once through appropriate legislative measures additional federal funds for grants to the states in amounts adequate to carry out the recommendations of the advisory committees on maternal and child health services and on services for crippled children for expansion of the respective programs.

2. *Statewide Coverage.*—Funds for these services should be made available in sufficient amounts to allow progressive expansion of the programs until each state is able to assure the availability of these services to all mothers and children within the state.

The state plans should show the steps that will be taken and the method that will be developed to provide such statewide coverage within a limited period, preferably not more than ten years.

A state plan should provide measures to make known to all communities the availability of health facilities for maternity and child care, including transportation to such facilities when needed.

3. *Expansion of Community Health Services for Mothers and Children.*—Health services, including treatment services, should be made available throughout every state for mothers and infants, and for children of all ages, including those in school and those at work. These health services should include periodic health examinations, provision for medical care when conditions are found that are detrimental to health, growth or development or when children are sick, dental health service and care (including care for the pregnant and nursing mother) and mental health service at all stages of the child's development (and for the mother during the maternity period).

School Health Service: Special emphasis should be placed on the improvement in school health services, including those in academic and vocational high schools. The services of preventive, diagnostic and treatment agencies should be coordinated with programs of health instruction or other services provided by departments of education and welfare. Normal school and in-service education of teachers should include preparation in the recognition of normal growth and development of children, the signs and symptoms of illness, and the conditions governing a healthy and safe school environment.

Special emphasis should be placed on the need for improved diagnostic services among school children and on the organization of facilities for medical care of children with adverse health conditions.

Since rheumatic fever among children of school age is of such great importance, particular attention should be given to the development of appropriate diagnostic services to detect this disease early.

Hospital and Clinic Care for Mothers and Children: Financial provisions should be made without further delay to provide adequate clinic and hospital service to mothers, infants and children as part of the community health service and to assure continuity of care for maternity patients and newborn infants.

The Steering Committee on Health Services is composed of chairmen of standing subcommittees of the Children's Bureau; namely: *Maternal and Child Health Services*, Dr. Nicholson J. Eastman of Johns Hopkins Hospital; *Medical Services*, Dr. Oscar L. Miller of the North Carolina Orthopedic Hospital; *Rheumatic Fever*, Dr. T. Duckett Jones of the House of Representatives; *Subcommittee on Medical Social Work*, Dr. George S. Bridge, Mass.; *Advisory Committee on Mental Hygiene*, Dr. George S. Stevenson of the National Committee for Mental Hygiene, Inc.; and the *Committee on Maternal and Child Health* of the Association of State and Territorial Health Officers, Dr. Felix J. Underwood, executive officer of the Mississippi State Board of Health. The meeting on January 28 was attended also by Dr. Joseph S. Wall, president, American Academy of Pediatrics; Dr. George M. Wheatley, assistant medical director, Metropolitan Life Insurance Company, New York; and Miss Hazel Corbin, general director, Maternity Center Association, New York, all members of the Children's Bureau Advisory Committee on Maternal and Child Health Services.

Hospital Construction: In the development of plans for hospital construction, special consideration should be given to the need of making adequate provision for maternity beds and for pediatric beds, including those for newborn infants, for children with communicable diseases and for children requiring prolonged sanatorial or convalescent care.

Care of Premature Infants: A greatly expanded program for the care of premature infants, developed as an integral part of the community health program, should be inaugurated to the end that all general, children's and maternity hospitals shall be equipped with modern nurseries under the supervision of qualified pediatricians and pediatric nurses. State health agencies should designate premature birth as a reportable condition of an emergency character, and emergency transportation facilities should be provided when necessary.

Obstetric, Pediatric and Other Consultants: Each state department of health should employ on its staff qualified obstetric and pediatric consultants to supervise health clinic services for mothers and children, to coordinate service in clinics with care in hospitals and so provide for continuity of service, and to serve in an advisory and consultative capacity to local physicians on the care and management of obstetric and pediatric patients. Similarly, consultants in mental health and dental care should be employed for like purposes.

Education in Maternity and Child Care: A continuous nationwide educational program as to what constitutes adequate care during maternity, infancy, early childhood and later childhood (including adolescence) should be carried out. State and local health agencies should develop programs of adult education in health subjects with emphasis on education for parenthood. Education departments should emphasize instruction in maternal and child health in appropriate courses. Suitable printed and other educational materials should be made available to parents at the appropriate time, and the use of similar material in high schools should be incorporated in the curriculum. Special attention should be given to the development of visual aids, such as exhibits, posters and films. It is of utmost importance that the quality of the preventive and treatment services be such as to reinforce and enhance this educational program in maternity and child care.

The Children's Bureau is urged to outline ideal standards for maternity and child care, including care of crippled children, and to publish and distribute these standards widely through national, state and local agencies, official and voluntary. In addition, it is essential that the federal agency should establish minimum requirements on standards of care for services under state programs receiving federal financial aid.

4. Expansion of Service for Crippled Children.—Crippled children's services should be extended through provisions for clinic, hospital and other types of care, as indicated, until complete service is made available to the entire nation.

Rheumatic Fever: In view of the fact that rheumatic fever, together with rheumatic heart disease, is the leading cause of death from disease among children of school age, and in view of the recognized need for the extension of services for children with this disease, a rheumatic fever program should be developed in each state. The program should include diagnostic and treatment services and aftercare and should be expanded as rapidly as the availability of personnel and facilities will allow until the service is statewide.

Children with Cerebral Palsy: Special provisions should be made for children with cerebral palsy, with emphasis on its prevention through competent obstetric care. Encouragement should be given to the establishment of special centers for the training of children with cerebral palsy.

Other Physical Handicaps: Diagnostic and treatment services for crippled children should be extended to include children of all ages with other physically handicapping conditions, such as visual and hearing defects or diabetes or other chronic diseases. Special emphasis should be placed on coordination of these services with the school health services and on utilization of the school health service as a case finding source.

5. Administration of Crippled Children's Program by State Health Departments.—In view of the fact that the crippled children's program is one primarily involving medical care, it is recommended that all crippled children's programs be administered by state health departments.

The Children's Bureau and the responsible state agencies should continue to work for the elimination of court action in determining children's eligibility for care under the crippled children's program.

6. Improvement in the Quality of Care.—A state plan for maternal and child health or crippled children's services should include provision for continuing improvement in the quality of the care given. This implies that full consideration be given to the needs of each patient and that all community resources be mobilized for this purpose. The organization and administration of the services should be sufficiently flexible to meet the range of individual needs.

To assure care of high quality, a state plan should provide for—

(a) Qualification standards for administrative and clinical personnel and institutional services.

(b) Opportunity for graduate and postgraduate training for all personnel necessary to administer the program or provide care.

(c) Sufficient personnel and facilities and adequate remuneration.

(d) Consultant service in obstetrics, pediatrics, orthopedics, mental health, dental health and other specialties as required.

(e) Use of adequately equipped health centers, hospitals, clinics and laboratories.

(f) Use of groups of physicians, individual private practitioners, nurses, social workers, nutritionists and other professional workers for the purpose of effectively coordinating preventive, diagnostic, consultative and curative services.

(g) Effective use of community welfare, education and rehabilitation services.

(h) Suitable distribution of hospitals, convalescent and other facilities, diagnostic and therapeutic services, and transportation of patients to these services when necessary.

(i) A planned relationship between centrally located hospitals with special diagnostic and therapeutic services, local community hospitals, clinics, health centers and practicing physicians.

To assure nationwide care of high quality, the federal agency should—

(a) Develop national standards of care and establish minimum requirements.

(b) Provide grants-in-aid to the states that will make possible equalization of opportunity for care of high quality.

(c) Aid in the training of personnel and in the development of facilities.

7. Provision for Training Personnel.—As far as may be found to be necessary, federal funds should be made available to states to provide well trained personnel for carrying out the services under the maternal and child health and crippled children's programs by granting fellowships, scholarships and special stipends for all types of professional personnel to be employed under these programs.

Funds should also be made available to make possible the development of new courses for the training of professional personnel when such courses are found to be necessary. This may involve responsibility in helping to define curriculum content in new areas of service where it is now undefined. Old courses need to be improved and new courses developed to coordinate and integrate training in the fields of clinical medicine and public health.

8. Expansion of Advisory Services and Investigations by Children's Bureau.—Personnel should be made available by the Children's Bureau to assist the states in the development of coordinated community programs and the integration of health, welfare and educational services for mothers and children within the states and in the development and proper utilization of advisory committees.

The Children's Bureau should develop a unit on school health, which, in cooperation with the Office of Education and the U. S. Public Health Service, will work with the several state health agencies to carry out the recommendations in this report relating to the school health program. The functions of such a school health unit should also include program planning in cooperation with the U. S. Public Health Service and the Office of Education—such planning to involve assistance to the states in the preparation of school health personnel, improvement of case

finding procedures in the schools and diagnostic services, the development and utilization of community treatment facilities for care of adverse health conditions found in school children, and the study of methods of preventing such conditions.

A consulting psychiatric staff should be established within the Children's Bureau to advise states and communities in planning psychiatric and mental hygiene services for children, to advise the Children's Bureau on the training of personnel for this field, and to cooperate with the staff of the U. S. Public Health Service with respect to those aspects of its mental hygiene activities that concern children.

Appropriations to the Children's Bureau should include adequate funds to enable the bureau to administer effectively the programs of grants to states, to undertake investigations, administrative studies and demonstrations on maternal and child health and crippled children's services, to make reports on such studies and to promote postgraduate training and education in these fields. As circumstances permit, increased effort should be devoted to studying and reporting on programs and methods as developed by the various states in order to stimulate exchange of ideas and experience.

Medical Legislation

MEDICAL BILLS IN CONGRESS

Change in Status.—H. R. 2277 has been reported to the House of Representatives, proposing to enact a "Nurses' Selective Service Act of 1945." This bill provides that every female residing in the United States who has reached the twentieth anniversary of her birth but who has not reached the forty-fifth anniversary and (1) who has been a registered nurse in any state, territory or possession of the United States or in the District of Columbia or (2) who is a graduate of a school of nursing and eligible to apply for examination for registration as a registered nurse in the jurisdiction in which such school is situated or in which she resides will be made subject to registration and selection for and induction into the land and naval forces of the United States under the Selective Training and Service Act of 1940, as amended.

Bills Introduced.—S. 581, introduced by Senator Downey, California, proposes to confer benefits of hospitalization and privileges of soldiers' homes on certain persons who served in a civilian capacity under the jurisdiction of the Quartermaster General during the War with Spain, Philippine Insurrection or the China Relief Expedition. H. R. 2180, introduced, by request, by Representative Herter, Massachusetts, proposes to enact a "Merchant Marine Veterans' Readjustment Act of 1945." This bill follows closely the provisions of the G. I. Bill of Rights and, in addition, authorizes the chairman of the United States Maritime Commission and the United States Public Health Service to provide adequate facilities for the medical, surgical and dental treatment and hospitalization without charge for merchant marine veterans and dependent members of their families. H. R. 2234, introduced by Representative Traynor, Delaware, proposes to provide grants to states, political subdivisions of states and municipalities for developing and maintaining dental health plans consisting of effective measures for dental health education and for the prevention, treatment and control of dental diseases. H. R. 2253, introduced by Representative Priest, Tennessee, proposes to establish in the Veterans' Administration a commissioned service consisting of physicians, surgeons, dietitians, nurses and medical technicians.

STATE LEGISLATION

Maryland

Bills Introduced.—S. 306 proposes to enact a separate chiropody practice act and to create a board of chiropody examiners, to be selected by the board of medical examiners, to examine and license applicants for licenses to practice chiropody. H. 310 proposes to enact a separate naturopathic practice act and to create an independent board of naturopathic examiners to examine and license applicants for licenses to practice naturopathy. H. 330 proposes to enact a separate practice act for physical therapy practitioners and to create a board of physical

therapy examiners, to be appointed by the governor from a list submitted by the Medical and Chirurgical Faculty of Maryland, to examine and license applicants for licenses to practice physical therapy. Physical therapy is defined to be "the therapeutic use of physical agents other than drugs, the use of physical, chemical and other properties of heat, light, water, electricity, massage, exercise, medical gymnastics, analysis as taught in physical therapy schools, and radiation, exclusive of x-ray radiation or radium treatment. It shall be the duty of all licensed physical therapists to conduct themselves in an ethical manner and to practice in all ways in conjunction and complete cooperation with the licensed medical practitioners of this state."

Massachusetts

Bills Introduced.—S. 421 proposes to make it unlawful for any hospital supported in whole by the commonwealth or any subdivision thereof to receive medical students in the institution for the purpose of clinical instruction, service and observation unless similar opportunities are made available to students of all legally chartered medical schools in the commonwealth. H. 1150 proposes to prohibit the operation of a convalescent or nursing home without a license from the department of public welfare.

Nebraska

Bill Introduced.—L. B. 355, to amend the laws relating to chiropractic, proposes to authorize chiropractors to sign death certificates.

New Mexico

Bills Introduced.—S. 35 proposes to authorize the establishment and operation of four state general hospitals to provide general medical care and treatment for the people of the state. S. 194 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a physician's certificate, based on examination and laboratory test, that the party is either not infected with syphilis or, if so infected, is not in a stage of that disease which may become communicable to the marital partner. S. 204, to amend the laws relating to the practice of osteopathy, proposes, among other things, to accord osteopaths the same right as physicians of other schools of medicine with respect to the rendering of medical services under the provisions of public health, welfare and assistance laws. The bill proposes specifically to provide that no plan or program which discriminates against osteopaths shall be approved by any public official.

Texas

Bill Introduced.—S. 52, to amend the workmen's compensation act, proposes to afford compensation for disabilities arising from stated occupational diseases contracted in the course of employment.

Official Notes

DOCTORS LOOK AHEAD

Broadcast on the largest network (one hundred and twenty-three stations) ever made available for a nonprofit health education program, Doctors Look Ahead takes up vital problems of our fighting forces and our people at home. The next three programs will deal with the following topics:

March 3, Nutrition at Home. Speaker, Dr. G. K. Anderson, Secretary of the Council on Foods and Nutrition of the American Medical Association.

March 10. Rheumatic Fever.

March 17. Women at War, in cooperation with the Office of War Information, speaker to be announced.

In view of the paper shortage, no invitations are being issued to listeners to write in. Nevertheless the program is attracting a considerable audience mail, indicating a widespread public interest in the vital topics which are being discussed. The dramatic qualities of the broadcasts are receiving complimentary attention in radio circles.

This program, which began January 6, will continue through June 30 each Saturday at 4 p. m. Eastern War Time (3 p. m. Central War Time, 2 p. m. Mountain War Time and 1 p. m. Pacific War Time).

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

ALABAMA

Public Health . . . Is Many Things.—The state department of health has recently published a thirty-six page booklet entitled "Public Health . . . Is Many Things." Brought out under the direction of Dr. Burton F. Austin, Montgomery, state health officer, the booklet is aimed to disseminate information concerning the activities of the state department of health. Included among the discussions are Keeping Water Supplies Safe; The Public Health Nurse Plays an Important Role; Cancer-Control Program is Aimed at an Ancient Enemy; Free Maternity Care for Mrs. G. I. Joe, Building a Stronger State with Better Food; Rabies Research in Alabama; Public Health Makes Gains in War on Venereal Diseases, Malaria, the Plague of the Centuries, is Being Mastered; Medical Science Pulls Fangs of Deadly Tubercle Bacillus; Rat Destruction Holds Key to Endemic Typhus Control, Motion Picture is Enlisted in the Fight on Disease and Negroes Greatly Complicate State's Health Problems. Other discussions answer average questions in the lay person's mind concerning the bureau of vital statistics, show the state board's activities in releasing health educational material through lectures and other sources, demonstrate the service of the library in obtaining health information and discuss service and efforts carried out in protecting food, drink, and communicable and industrial diseases. The well illustrated booklet depicting the activities of the department is concluded with an analysis of the per capita cost of public health and combined range of figures showing the state's health for certain periods.

CALIFORNIA

Service Officers May Treat Civilians in National Parks.—The San Francisco *News* recently reported that Attorney General Robert W. Kenny ruled that service medical officers not licensed in California may treat civilian visitors in national parks if a civilian doctor is not employed. The opinion was sought by the state board of medical examiners, which questioned whether a navy doctor stationed at Yosemite National Park for the benefit of servicemen that were quartered there could serve civilians.

Personal.—Dr. Jacob C. Geiger, director of public health of the city and county of San Francisco, recently received the official medal of the National Order of Merit, "Carlos Manuel de Cespedes." The medal was awarded by Dr. Ramon Grau San Martin, president of Cuba, also a physician.—Dr. Orvall Smiley, resident physician for the Pacific Coast and Electric Company at Big Bend, has been appointed to a similar position with the Folsom State Prison, filling a position that has been vacant for a number of years. Dr. Smiley is taking over work now being done on a part time basis by two private practitioners, Drs. Paul DeWitt Barnes, Loomis, and James F. McAnally, Roseville.—Dr. Alfred C. Dick, medical director of the Consolidated Vultee Aircraft, box 685, La Jolla, has resigned.—Dr. Edith F. Young, San Francisco, is the new health officer of Sonoma County.

CONNECTICUT

Charles Bartlett Celebrates Eightieth Birthday.—Dr. Charles J. Bartlett, emeritus professor of pathology, Yale University School of Medicine, New Haven, and for many years president of the Connecticut Medical Examining Board, recently was guest of honor at a dinner at the New Haven Medical Association given in recognition of his eightieth birthday. Dr. David R. Lyman, Wallingford, was toastmaster at the dinner and speakers included Drs. H. Gildersleeve Jarvis, Hartford, president of the state medical society, Thomas P. Murdock, Meriden, of the state medical examining board, Joseph I. Linde, health officer for the city of New Haven, and Marvin M. Scarbrough, president of the New Haven Medical Association.

Health and Human Relations.—Dr. Charles J. Prohaska, Hartford, state supervisor of health and physical education, is the coordinator of a lecture and work-shop course in health and human relations which opened at the New Haven State

Teachers College, February 8. The first session was devoted to orientation and the second to a lecture by James H. S. Bossard, Ph.D., University of Pennsylvania, Philadelphia, on "Family Background for Social Hygiene." Among others participating in the series are:

Rev. Liston Pope, Ph.D., Divinity School, Yale University, Moral Perspectives on Health and Sex, March 8.
Maurice A. Bigelow, Ph.D., American Social Hygiene Association, New York, Status of Sex Education in the Schools, March 15.
Dr. James S. Plant, Newark, N. J., Growth and Development of the Child, March 22.
Dr. Marion B. Leonard, New Haven, Anatomy and Physiology of Sex, March 29.
Drs. Maurice J. Strauss, New Haven, and Henry P. Talbot, Hartford, Venereal Diseases, April 5.
Charles Edward A. Winslow, Dr. P. H., and Grace Mooney, Ph.D., New Haven, General Aspects of Public Health in Relation to Family Life, April 12.
Frances Roth, Connecticut State War Council, Program of Social Protection in Connecticut, April 19.
Dr. Howard M. Haggard, New Haven, Alcoholism and Its Effect on Family Life, April 26.
Robert Tabet, Philadelphia public schools, Role of the School Counselor in Health and Human Relations, May 3.
Dr. James M. Cunningham, Hartford, Family and Mental Health, May 10.
Harvey J. Fuller, Wethersfield High School and Marjorie Woodlock, Connecticut War Council, Youth Panel, May 17.
Jois J. King, New Haven Teachers College, Approach to Health and Human Relations in Elementary School, May 24.
Iester A. Kirkendall, Ph.D., U. S. Office of Education, Washington, D. C., Teacher Training in Health and Human Relations, May 31.

ILLINOIS

Chicago

Dr. Kretschmer to Address Service for Chronically Ill.—Dr. Herman L. Kretschmer, President of the American Medical Association, will address the Central Service for the Chronically Ill of the Institute of Medicine of Chicago at the Standard Club, March 6. His subject will be "The Problem of the Chronically Ill Patient." Dr. William F. Petersen, chairman of the administrative committee, will preside at the meeting.

Personal.—At the recent annual meeting of the board of governors of the Institute of Medicine of Chicago, a resolution was unanimously adopted commending James C. Leary, science editor of the Chicago *Daily News*, for his valuable reporting of medical affairs, especially for much needed publicity concerning local health conditions and problems, and of grateful appreciation for his interest and cooperation in the activities of the Institute of Medicine of Chicago. Mr. Leary is now preparing to go to the European theater of operations as war correspondent for the *Daily News*.

Refugee Physician Permitted to Take Examination.—In a ruling February 13 the appellate court upheld the plea of Dr. Leopold Schutz, a German refugee, to be permitted to take an examination for a license to practice medicine. Specifically, the appellate court affirmed the ruling of Judge John C. Lowe, who issued a writ of mandamus directing the state department of registration and education to permit Dr. Schutz to take the examination. According to the Chicago *Sun*, Dr. Schutz, who was born in Germany, stated that he attended four universities, was graduated from the University of Munich in 1913 and was licensed in 1917. In 1938, he said, the Nazis deprived him of his license and confiscated the transcript record of his studies because he is a non-Aryan. In the case of Dr. Schutz the appellate court ruling was unnecessary, it was stated, because after the ruling by Judge Lowe Dr. Schutz had been permitted to take the examination and passed it.

INDIANA

Leroy Edwards Named Professor of Pharmacology.—Leroy D. Edwards, Ph.D., professor of pharmacology, University of Florida, Gainesville, has been appointed professor of pharmacology at the School of Pharmacy at Purdue University, Lafayette, following the vacancy that was created in October 1944 when Curtis H. Waldon, Ph.D., went to the Montana State University, Missoula, to become dean of the School of Pharmacy there.

Tom Hendricks Joins American Medical Association.—Mr. Thomas A. Hendricks, since 1924 executive secretary and head of the bureau of publicity of the Indiana State Medical Association, Indianapolis, has joined the staff of the American Medical Association on a part time basis as Secretary of the Council on Medical Service and Public Relations, with headquarters in Chicago. Mr. Hendricks, who served overseas for thirteen months during the first world war, has been managing editor of the state medical journal for the past ten years.

Writing Among Students.—Twenty-six students in the Indiana University School of Medicine, Indianapolis, achieved distinction during 1944 in writing medical articles, according to an announcement from the school. Included among the students accredited this recognition for work in writing, which Dr. Willis D. Gatch, dean of the medical school, has declared to be an essential part of the training of physicians, are:

Junior surgery papers.—Melvin A. Block, Evansville; Justin E. Arata, Mishawaka; Geraldine M. Zix, Indianapolis; Morris Green, Indianapolis; Donald L. Trinosky, Indianapolis; Charles G. Smith, Indianapolis; Frederick C. Green, Fort Wayne; Willard A. Scanland, Richmond; Paul M. Dassel, Evansville, and William R. Noe, Indianapolis.

Sophomore bacteriology papers.—Robert C. Bartlett, Bloomington; William C. Robertson, Indianapolis; Paul S. Jarrett, Sharpville, and William J. Miller, Fort Wayne.

Sophomore history of medicine papers.—Joseph V. Schetgen, New Castle; William G. Bannon, Kokomo; Robert W. Harger, Indianapolis; Floyd B. Coleman, Martinsville, and John Martin Miller, Indianapolis.

Senior medicine papers.—Ben Wilson Jr., Bloomington; Rex L. Huff, South Bend; Carolyn Mann Rawlins, Hammond; Harold R. Tharp, Trafalgar; Norris J. Kroy, Paragon; Robert F. Lloyd, Fort Wayne, and George S. Westfall, Goshen.

Students writing the junior and sophomore papers have received the annual Osterman awards on the basis of selections made by the editorial board of the *Quarterly Bulletin* of the school of medicine.

KANSAS

State Meeting Canceled.—The Kansas Medical Society announces the cancellation of its 1945 meeting, which was scheduled to be held in Wichita, May 16-17.

New Department of Physical Medicine.—Dr. Gordon M. Martin, formerly of Rochester, Minn., is director of a recently organized department of physical medicine at the University of Kansas School of Medicine, Kansas City, with the title associate professor. The department holds the same status in the medical school as other departments such as surgery and physiology and offers courses in occupational therapy and physical therapy in addition to regular courses being offered to medical students and nurses. A short lecture course in physical medicine is being offered to senior medical students.

LOUISIANA

Symposium on Tuberculosis.—A symposium on tuberculosis scheduled to be held at the Louisiana State University School of Medicine, New Orleans, April 17-19, has been canceled. It was sponsored by the university, the National Tuberculosis Association, the tuberculosis control division of the U. S. Public Health Service and the Louisiana State Tuberculosis Association.

MASSACHUSETTS

Approving Authority Upheld on Accreditation of Middlesex Graduates.—The superior court of Suffolk County on January 5 upheld the Massachusetts Approving Authority for colleges and medical schools that graduates of Middlesex University could not qualify to take state board examinations to practice medicine. Superior Judge Charles C. Cabot is reported to have said, according to the *Connecticut State Medical Journal*, "My decision is primarily based on a comparison of this school with other medical schools concerning which evidence was produced. These were primarily the medical schools of Boston University, Harvard and Tufts College." He is also reported to have said that Middlesex School did not have "adequate financial backing," that the "quantity of its faculty is not sufficient" and that "the most serious deficiency of all is its almost complete lack of clinical facilities for teaching." The law establishing the Approving Authority was signed by the governor of Massachusetts, James M. Curley, in 1936. An editorial in the *New England Journal of Medicine* reports that a photograph taken at the time he signed the bill shows several members of the Massachusetts Medical Society watching the proceedings, including Dr. Charles E. Mongan, Somerville, then president of the society, and Dr. Stephen Rushmore, Boston, then secretary of the state board of registration in medicine, who automatically became a member of the Approving Authority and who is currently dean of the Middlesex University School of Medicine, Waltham. Soon after its establishment the Approving Authority drew up the seventeen qualifications that a medical school must meet in order to be approved.

MICHIGAN

Beaumont Lecture.—Dr. J. Arnold Bargen, associate professor of medicine, University of Minnesota Graduate School, Minneapolis-Rochester, Minn., gave the twenty-fourth annual Beaumont Lecture of the Wayne County Medical Society at the Detroit Institute of Arts, February 19. His subject was "Modern Concepts of Intestinal Infection."

NEBRASKA

Oil Portrait of Dr. Poynter.—On February 14 an oil portrait of Dr. Charles W. M. Poynter, dean of the University of Nebraska College of Medicine, Omaha, was presented to the university by the C. W. M. Poynter Foundation. On this occasion announcement was made of the Poynter Fellowship in the medical sciences, also sponsored by the foundation. The stipend of the recipient of this fellowship is \$1,200 for a period of tenure of ten months, during which time he will be expected to devote his entire time to research under direction of any of the preclinical or preclinical and clinical departments of the college. Applicants should have concluded at least the first two years of medicine and have demonstrated exceptional ability and, in the opinion of the fellowship committee, indicate aptitude for advanced study and investigative work in the medical sciences. The recipient may become a candidate for an advanced degree in the medical sciences under the current rules of the graduate college. Applications for the next academic year are invited. They should be sent to Dr. A. Ross McIntyre, chairman of the fellowship committee, or the secretary of the foundation, John S. Latta, Ph.D. The program accompanying the presentation of the portrait included an address by Col. Edgar V. Allen, M. C., on "The C. W. M. Poynter Foundation." The portrait was presented by Dr. McIntyre and accepted by Chauncey Samuel Boucher, LL.D., Lincoln, chancellor of the university. It was executed by Mr. Edgar Miller, Chicago. The Poynter Foundation was established to honor Dr. Poynter, dean of the medical school since 1929 (*THE JOURNAL*, Sept. 30, 1944, p. 309).

NEW YORK

Wayland Chester Dies.—Wayland Morgan Chester, Sc.D., professor emeritus of biology, Colgate University, died at Hamilton, February 7, aged 74.

Gift to Cornell for Nutrition Building.—Newspapers announced that directors of the Cooperative Grange League Federation Exchange have given \$200,000 to Cornell University, Ithaca, toward providing a suitable building for the Cornell School of Nutrition, established in 1941. Leonard A. Maynard, Ph.D., is director of the school.

Albert Kaiser Named Health Officer of Rochester.—Dr. Albert D. Kaiser, associate professor of pediatrics, University of Rochester School of Medicine and Dentistry, Rochester, has been appointed health officer of Rochester, succeeding Dr. Arthur M. Johnson, who had reached the retirement age late in 1944 but who was retained in the city service by request. Dr. Johnson has served as health officer since 1932; he will retire March 31. Dr. Kaiser graduated at Harvard Medical School, Boston, in 1913.

New York City

Publication Anniversary of Gessner's Bibliography.—An exhibition of books on medical bibliography through the eighteenth century, arranged in honor of the four hundredth anniversary of the publication of Konrad Gessner's bibliography, is on display in the library of the New York Academy of Medicine through April 1.

Francis Carter Wood Honored.—The unveiling of a portrait of Dr. Francis Carter Wood, director of pathologic laboratories and of radiotherapy, St. Luke's Hospital, was a feature of a tea given February 14 at the hospital in recognition of Dr. Wood's completion of fifty years' continuous service as a member of the hospital staff. The portrait was painted by Leonihel Jacobs and was unveiled by Lincoln Cromwell, president of the hospital, where it will be hung permanently. Dr. Wood served his internship at St. Luke's Hospital. He became director of the pathologic laboratories in 1910 and director of radiotherapy in 1921. He is professor emeritus at the Institute of Cancer Research, Columbia University.

OHIO

Creation of Tuberculosis Division.—The Ohio Public Health Council recently approved the establishment of a division of tuberculosis in the state department of health. The project was recommended by the advisory committee on coordination of tuberculosis programs after a two year study. Another recommendation, now in the process of completion, was the conversion of the Ohio State Sanatorium for Incapacitated Pulmonary Tuberculosis into a hospital for institutionalized mental patients with tuberculosis. The state department of welfare has money, plans and specifications for this project but is awaiting the removal of wartime restrictions. Other recommendations in the report of the two year study were:

the establishment of two new state institutions for the tuberculous and covered state subsidy to local tuberculosis institutions, both of which were embodied in bills introduced in the legislature in January, and urged the creation of diagnostic treatment centers in the state. Another recommendation asked that x-ray equipment be provided for each of the state institutions and that routine chest examinations be made of all employees and patients in such institutions.

OREGON

Frederick D. Stricker Resigns as State Health Officer.—Dr. Frederick D. Stricker has resigned as health officer of Oregon, according to the *Portland Oregonian*. He has been succeeded by Dr. Harold M. Erickson, assistant state health officer. It was stated that the resignation came almost exactly on the twenty-fifth anniversary of Dr. Stricker's original appointment to the position.

PENNSYLVANIA

Veterans Loan Fund.—The Medical Society of the State of Pennsylvania is planning to create a Veterans Loan Fund to meet the costs of books, equipment, change of location or a short graduate course for returning members of the society from military service. The fund will be built up by pledges of county medical societies through their individual membership. The money will be deposited as a central fund by the Medical Society of the State of Pennsylvania. Ninety per cent of the total amount donated by each county medical society will be used only for loans to returning members of such county society on formal application and approval made through and by such county society. After the fund has completed its usefulness, or at the end of three years after the war is ended, whichever shall be the earlier date, the total balance of the 90 per cent and the names of all outstanding debtors with the amounts involved will be returned to the county society to be disposed of in any way it may designate. Ten per cent of the total amount given by each county society will be maintained by the state medical society as a central fund from which deserving members from counties too small to raise an appreciable fund will be helped on application approved by their respective county society. This fund will be kept for an indefinite period to meet catastrophic needs of veterans or their families. The officer who will administer this fund shall be named by the board of trustees of the state medical society. Pledges to the fund were sent by the state society to county societies under date of February 19. The appeal is made to 7,250 "home front" members and concerns the approximate total of 2,600 fellow members now in military service.

Philadelphia

Merit Award to Colonel Ravdin.—Col. Isidor S. Ravdin, M. C., Harrison professor of surgery, University of Pennsylvania School of Medicine, was recently presented with the award of merit of the Alumni Society of the University of Pennsylvania. *Science* reports that Colonel Ravdin holds the Legion of Merit for outstanding service as commander of an army hospital in India which was organized by the university.

Memorial Gift.—The Temple University Hospital has received \$11,943.44 from the estate of John Edwin Wells, deceased. According to the *Pennsylvania Medical Journal* this money was bequeathed in memory of his wife's father, Dr. Edmund Wales Holmes, who was first surgeon to the Temple University Hospital and served from 1893 to 1903. He was also the first professor of surgery in the Temple University School of Medicine.

WISCONSIN

Alumni Research Foundation Denies Accusations of Illegality.—On February 14 the Wisconsin Alumni Research Foundation filed in the U. S. District Court a reply denying all accusations of illegality and asserting that all actions were designed to safeguard the public interest and preserve legitimate royalty income, newspapers report. The filed reply is an answer to a government suit charging monopoly, price fixing and other violations in connection with the marketing of patented vitamin D products, it was stated. Litigation started about eighteen months ago, when the foundation sued Douglas Laboratories, manufacturing chemists, for patent infringement. The government intervened with a counterclaim against the foundation and last October amended the counterclaim to include seventeen other defendants, naming one individual and ten drug and food companies. Newspapers stated that the case had been scheduled for trial before Judge John Peter Barnes, Chicago, on September 11.

GENERAL

National Negro Health Week.—"A Healthy Family in a Healthy Home" will be the theme of National Negro Health Week, to be observed throughout the country April 1-8. Literature concerning the educational observance may be obtained from the National Negro Health Week Committee, U. S. Public Health Service, Washington 14, D. C.

Meetings Canceled.—The Society of American Bacteriologists announces that its annual session, which was to have been held in Detroit, May 22-25, has been canceled. Leland W. Parr, Ph.D., 1335 H Street N.W., Washington 5, D. C., is secretary-treasurer. All 1945 meetings of the American Pharmaceutical Manufacturers' Association have been canceled, according to an announcement January 18. The American Psychiatric Association announces that its annual meeting, scheduled to be held in May in Chicago, has been canceled. There was a meeting of the councilors of the association February 26-27 to consider means of taking care of urgent business of the association arising out of the cancellation of the annual session.

Roy Hoskins Named Salmon Lecturer for 1945.—Dr. Roy Graham Hoskins, research associate in physiology, Harvard Medical School, and director of research of the Memorial Foundation for Neuro-Endocrine Research, Boston, has been selected as the Salmon Memorial Lecturer for 1945, according to the Salmon Committee on Psychiatry and Mental Hygiene, 200 Retreat Avenue, Hartford 2, Conn. "The Biology of Schizophrenia" will be the theme of the Salmon Lecture series to be given at the New York Academy of Medicine, 2 East 103d Street, New York, on three successive Friday evenings, November 2, 9 and 16 at 8:30 p. m. The title of Dr. Hoskins' first lecture will be "Nature of Schizophrenia," the second "Manifestations of Schizophrenia" and the third "Treatment of Schizophrenia and Needs for the Future."

Dr. Spain Retires as Secretary of Allergy Group.—Dr. William Cook Spain, New York, has resigned as secretary of the American Academy of Allergy and has been succeeded by Dr. Karl D. Figley, Toledo, Ohio. Dr. Spain served as secretary of the Association for the Study of Asthma and Allied Conditions for some twenty years, becoming secretary to the American Academy of Allergy, formed by a merger in 1943. In this year Dr. Spain announced that the money which had been allotted to him as secretary of the Association for the Study of Asthma and Allied Conditions, a parent body of the new group, had been assembled into a fund to form an annual Secretary's Prize. The first recipient of this prize was recently announced as Dr. J. Harvey Black, Dallas, Texas, who was chosen for his paper entitled "The Treatment of Urticaria with Synthetic Vitamin K," read at the first meeting of the American Academy of Allergy in New York, Dec. 11, 1944.

Putting the Disabled Veteran Back to Work.—The Industrial Hygiene Foundation of America, Pittsburgh, brought out in January bulletin 3 in a special series entitled "Putting the Disabled Veteran Back to Work." It is published as part II of a panel started at its annual meeting in 1943 and part I of the proceedings of the 1944 annual session. During the year following the 1943 session members of a panel have answered inquiries from industry on procedures for successful job placement of veterans, have examined proposed company plans for reemployment of ex-servicemen and have otherwise provided information and assistance to member companies and industry generally. Members of the panel are:

Dr. Clarence D. Selby, Detroit, medical consultant, General Motors Corporation, chairman.

Col. John N. Andrews, officer in charge of postwar activities, National Selective Service System.

Dr. Harley L. Krieger, Dearborn, Mich., medical director, Ford Motor Company.

A. A. Hendrix, Linden, N. J., personnel director, Eastern Aircraft Division, General Motors Corporation.

I. Dent Jenkins, personnel manager, Harrison Radiator Division, General Motors Corporation.

Dr. Benjamin F. Streets, Sutersville, Pa., medical department, Westinghouse Electric and Manufacturing Company.

Annual Report of Infantile Paralysis Foundation.—A total of \$1,828,859 was authorized by the National Foundation for Infantile Paralysis to be expended in grants and appropriations between Sept. 30, 1943 and May 31, 1944 for research, education and the training of physical therapists, according to a report released February 23. The report covers only an eight month period because of a change in the fiscal year, and future annual reports will cover operations from June 1 to May 31. The report contains the information that a special fund of two million dollars for epidemic aid and other emergencies, has been established by the trustees, as of May 31, 1944, and that last summer's epidemic, the second worst outbreak of poliomyelitis in the history of the United States,

drew on the newly created fund to the extent of \$739,860 for use to supplement chapter funds in local communities hard hit by the outbreak. This expenditure, between June 1 and Oct. 31, 1944, while outside the fiscal period covered by the annual report, is mentioned in it as demonstrating the necessity for the establishment of a special fund "for such unforeseen epidemics and other emergencies." During the eight months covered by the fiscal report the national headquarters received \$5,191,148 as its share of the 1944 March of Dimes appeal, an additional \$5,293,232 remaining with the National Foundation's county chapters. Receipts from other sources, including \$240,000 donated by the producer of the motion picture *Forever and a Day*, increased the total income of the foundation for the fiscal period to \$5,452,593. The report discusses the extensive investigations and research carried on throughout the country in universities and other institutions through grants as well as certain projects conducted in the field during the 1943 outbreak. The report points out that in seeking improved methods of treatment of the disease it has been necessary to study other diseases and develop knowledge in many related fields.

Court Forbids Post Office to Bar Consumers Union Report on Contraceptive Materials from Mails.—A permanent injunction barring the Postmaster General from interfering with the mailing of the Consumers Union "Report on Contraceptive Materials" has been issued by Judge T. Alan Goldsborough of the U. S. District Court in Washington, it was announced February 16 by Osmond K. Fraenkel, attorney for Consumers' Union. The court's action came after the U. S. Court of Appeals for the District of Columbia reversed the earlier decision of Judge Goldsborough in which he upheld the right of the Postmaster General to bar the report from the mails. The Postmaster General failed to appeal to the Supreme Court for a review of the case and did not offer any further defense before the district court, Mr. Fraenkel stated. The report, which rates contraceptive materials by brand name on the basis of reliability and safety, was prepared by clinical and laboratory workers in the field and was first published by Consumers Union in 1937. It was sold only to those members of the organization who certified that they were married and used contraceptive materials on the advice of a physician, according to Mr. Fraenkel. The Post Office barred the 1941 revision of the report from the mails on the basis of a seventy year old statute forbidding the mailing of obscene materials, including contraceptive information. Consumers Union officials asked for recall of the ban on the ground that the law was not intended to apply to sound medical advice, such as the report gives. The Postmaster General refused to lift the ban, Mr. Fraenkel said, and Consumers Union applied to the courts for aid. The case was first heard by Judge Goldsborough, who ruled against Consumers Union in January 1944 on the ground that the statute was intended to apply literally. The Appeals Court, in overruling this decision, found that: "... Congress did not intend to exclude from the mails properly prepared information intended for properly qualified people. In our opinion, the material of the present case was prepared in the manner indicated and was proper in character."

Photographs of Physicians.—The Dr. Carl E. Black Collection of photographs of physicians, which was presented last year to the Illinois State Medical Society and which contained more than three thousand photographs, is now being augmented by the addition of hundreds of new photographs taken by Mr. Joseph Merante Jr., 475 Fifth Avenue, New York. The photographing of all members of the Illinois State Medical Society has been a feature of Mr. Merante's work for the past year, these photographs to be included in the Dr. Black Collection which will occupy space in the centennial building, Springfield, Ill., under the care of the Illinois State Historical Society. Among groups currently compiling photographic libraries through the work of Mr. Merante are the Medical Society of New Jersey, the Mississippi Valley Medical Society and the New York State Society of Pathologists. A result thus far of the project in Illinois is the completion of photographic libraries for the faculties of medicine of the University of Illinois and Chicago and Presbyterian and St. Luke's hospitals, all of Chicago. Aiming toward the ultimate collection of a complete library of the photographs of all physicians, to be included in the Carl Black group, Mr. Merante will eventually travel throughout the country to carry out the work. In conjunction with this activity Mr. Merante has been authorized to secure in the course of his travels photographs of representatives of American medicine who are at a distance from the American Medical Association, Chicago. He has already completed satisfactory portraits of the Board

of Trustees and Officers of the American Medical Association. The collection will be assembled in the historical material for the Centennial celebration of the American Medical Association in 1947. At the recent Annual Conference of State Secretaries and Editors in Chicago, photographs were taken of those in attendance, which totaled more than half of the total of the national group. The Carl E. Black Collection is said to be the largest single collection in the country except for that in the Office of the Surgeon General of the U. S. Army. It was started as a hobby by Dr. Carl Black, Jacksonville, president of the Illinois State Medical Society in 1904, and carried on for many years alone. It is now registered in the state museum at Springfield as the Carl E. Black-Illinois State Medical Society Collection (*THE JOURNAL*, April 29, 1944, p. 1308). Photographs taken by Mr. Merante are given to the state medical society to be mounted and added to the group to be placed in Springfield. In addition to showing the complete membership of the Illinois State Medical Society, the collection will ultimately represent a national library of physicians' photographs.

LATIN AMERICA

Health Activities in Latin America.—*Winthrop Inaugurates Research on Tropical Diseases.*—Dr. Felix Martí Ibañez, medical director of the Winthrop Products, Inc., New York, is supervising a newly created medical research program on tropical diseases common to South American countries. Cooperating in the research are San Marcos University, Lima, Peru, oldest college in the Western Hemisphere, the School of Medicine, Santiago de Chile, and the more important hospitals in Antiochia and Medellín, Colombia. Dr. Angel de la Garza Brito, Mexico, medical director of Laboratorios Winthrop, Mexican subsidiary of Winthrop Products, Inc., is supervising the studies being carried on in Mexico, which has the support of the School of Tropical Medicine, Mexico City. Special emphasis is now being given in Mexico to the treatment of malaria.

Medical Test for Argentine Citizens.—A new government decree requiring periodic medical examination for all Argentines was announced by the Argentine government on December 3, it is reported.

Penicillin Project.—According to *Science*, Dr. Jesuino Albuquerque, secretary of public health of the federal district of Rio de Janeiro, Brazil, is visiting the United States in order to collect data for the establishment of a municipal penicillin laboratory in Rio de Janeiro. In cooperation with the staff of Wyeth Incorporated, Philadelphia, arrangements have been made for a group of Brazilian chemists and bacteriologists to study the production and standardization of penicillin. Facilities at the Philadelphia, West Chester and Kimberton laboratories have been made available for this purpose.

Cancer Congress.—The second National Cancer Congress will be held in Havana, May 5-21. Additional information may be obtained from Dr. Hugh S. Cumming, director of the Pan American Sanitary Bureau, Washington, D. C.

Expenditures in Cooperative Medical Projects.—Cooperative medical projects set up since March 1941 in eighteen of the twenty South American countries, involving an expenditure of \$100,000,000, are contributing to "vast improvements in business and agriculture" which may be expected in the "very near future," Major General George C. Dunham, director of the Institute of Inter-American Affairs, told members of the American Foundation for Tropical Medicine at their annual meeting at the University Club, New York, February 5. Of the total so far spent \$65,000,000 was contributed by the United States and the remainder by the different participating countries. The two not cooperating are Cuba and Argentina. Approximately seven hundred medical projects are currently in operation, including work in both curative and preventive medicine. General Dunham cited particularly work being accomplished in Peru, Bolivia, Paraguay and Brazil. He said that total expenditures in Brazil had reached \$15,000,000 with both governments, Brazil and the United States, sharing the cost equally. Noteworthy was the work in malaria control.

Special Society Elections.—Newly elected officers of the Sociedad Cubana de Dermatología y Sifilografía include Drs. Manuel Alonso Pérez, president; Fernando Trespalacios Gómez, Manuel Alonso Pérez, president; Fernando Trespalacios Gómez, vice president, and Guillermo González Peris, secretary. New officers of the Sociedad de Estudios Clínicos de la Habana include Drs. Julio F. Schutte Visiedo, president; José Lanza Camps, vice president; Francisco Canosa Lorenzo, secretary; Luis Rodríguez Baz Alfonso, vice secretary; Luis Oñeca Verdes, treasurer, and Alvaro Silva Lopez del Rincon, vice treasurer.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb 3, 1945

Government Grants to Medical Schools to Depend on the Admission of Women and the Reform of Medical Education

In the House of Commons Mr Willink, minister of health, stated that the Interdepartmental Committee on Medical Schools has recommended a comprehensive program for the reform and development of medical education and research. Recognizing the fundamental importance of these to the future of the country's health services, the government has accepted the principle of increased grants to be distributed by the University Grants Committee to medical schools, postgraduate schools and institutes and hospitals used for teaching and research. The government shares the views expressed in the report on the importance of affording to women opportunities equal to those enjoyed by men for medical training and for obtaining postgraduate experience. It has therefore adopted the recommendation of the committee that future payments of grants to medical schools should be conditional on the school admitting a reasonable proportion of students of both sexes. But it recognizes that schools at present open to only one sex may require periods of varying lengths to adjust their arrangements to a coeducational basis. It proposes that the University Grants Committee in consultation with the university authorities concerned shall be charged with the responsibility of determining from time to time whether the action taken by a school is reasonable. The government attaches equal importance to the revision of the medical curriculum, and increased grants depend on the early completion of this process.

The Centenary of the Birth of the Father of Tropical Medicine

The centenary of the birth of Sir Patrick Manson, "the father of tropical medicine," was celebrated by the Royal Society of Tropical Medicine. Manson's famous diary, in which he recorded his main discoveries from 1873 on, was displayed. Portraits of him at various stages of his career and his drawings of the development of the filarias in the mosquito were shown. Sir Philip Manson-Bahr, his son-in-law, gave an interesting account of his career. In 1866 he went to Formosa, where he was port medical officer for four years and learned the language of the head hunters of the interior. After spending some years at Amoy, a treaty port on the mainland, he returned to Scotland in 1875. Stirred by Lewis's work on filarias in Calcutta he began to work with the microscope and discovered their nocturnal periodicity. In 1878 he demonstrated the life history of the filarias in the mosquito. Then his study of parasites progressed rapidly. He found *Paragonimus westernmanni* in the sputum of a Chinese mandarin and discovered the part played by *Melania libertina*. In 1883 he was appointed dean of the Hong Kong Medical School. Among his first pupils was Dr Sun-Yat-Sen the revolutionary whose life Manson and Cantlie saved when he was kidnapped in London by the Chinese embassy. In 1891 he formed the nucleus of what became the London School of Tropical Medicine. In 1894, arguing by analogy from what he had observed in filarias, he formulated his mosquito malaria theory, which Ronald Ross, then a major in the Indian medical service, proved. In an experiment designed to convince the British government, Manson infected his eldest son then a medical student with benign tertian malaria through the medium of anophles mosquitoes.

Additions to the British Pharmacopoeia

The last edition of the British Pharmacopoeia was published in 1932, and six addenda have followed. A seventh addendum is to be published in February. In addition to amendments to existing monographs, there will be new ones on amethocaine hydrochloride, amphetamine and its sulfate, aqueous ointments of ammoniated mercury and zinc oxide, cycloprane, dextrose hydrate, injection of protamine insulin with zinc, estradiol monobenzoate, estrone, phenobarbitone soluble, potassium sulfate, progesterone soluble, solution of sodium acetate (anticoagulant or with dextrose), sulfacetamide (and soluble), sulfadiazine (and soluble), sulfaguanidine, sulfapyridine (and soluble), sulfathiazole (and soluble), theophylline with ethylenediamine and thiopentone soluble. There will also be a general monograph on the production of tablets, with standards of weight and a disintegration test.

Remarkable Results of Forward Surgery in the Invasion of France

The *Army Medical Department Bulletin* states that it is an attractive proposition to bring the military surgeon forward to the patient so as to give early treatment but it is not nearly so simple to accomplish. Much foresight and organization are necessary. Two or more surgical units must be grouped and linked with transfusion units, and there must be good arrangements for nursing and postoperative care. The success of the arrangements in the British army can now be judged from the figures of twenty-one army group records for June to August 1944 during the invasion of France, they refer only to results in forward surgical units. The recovery rate in 1,592 penetrating abdominal wounds was 68 per cent, in 197 nonpenetrating abdominal wounds 90 per cent, in 127 acute conditions of the abdomen 98 per cent, in 292 thoraco-abdominal wounds 46 per cent, in 686 penetrating or perforating chest wounds 85 per cent, in 198 amputations of the arm 95 per cent, in 474 amputations of the leg 86 per cent, in 644 compound fractures of the femur 94 per cent, in 240 penetrating wounds of the knee joint 98 per cent, in 122 severe burns 89 per cent, in 122 cases of gas gangrene 72 per cent, in 297 penetrating headwounds 79 per cent, in 50 fractures of the spine and cord injuries 74 per cent and in 887 maxillofacial wounds 97 per cent.

These figures represent the immediate death rate up to the time when evacuation was considered possible. It is not yet known how many deaths occurred later, but in one series of 50,000 casualties treated at base hospitals the mortality was only 0.4 per cent. The term "nonpenetrating abdominal wounds" covers cases of laparotomy without discovery of an intraperitoneal lesion, although there might be extraperitoneal damage with or without free fluid or blood in the peritoneal cavity, it does not include wounds involving only the abdominal wall. These impressive results are the outcome of devoted, skilful and enthusiastic work.

Diet in Britain and in America Contrasted

The second report on food consumption levels in Britain, the United States and Canada has been prepared by the government. It shows that, in spite of the expansion of military needs and large shipments to the allies, United States and Canadian supplies have been maintained or increased in 1944 as compared with 1943 because of increased production. Food supplies for civilians in Britain showed some improvement on 1943 but continued below the prewar levels for many foods and below the levels in the United States and Canada for dairy products, meat, eggs, sugar and fruit. In both the United States and Canada meat consumption in 1944 was nearly 50 pounds per head more than in Britain. But to compensate for the shortage of these foods the consumption of potatoes and flour was increased and the British now eat substantially more of these

foods than are eaten in the United States and Canada. The minister of food, Colonel Llwellyn, stated at a conference that the inquiry had been most valuable. The main conclusions were that in all three countries food supplies had been maintained and, in some respects, increased compared with 1943.

PALESTINE

(From a Regular Correspondent).

JERUSALEM, Jan. 15, 1945.

Conference of Otorhinolaryngologists

The third conference of Jewish Otorhinolaryngologists in Palestine took place in Jerusalem in September 1944. The agenda contained discussions on allergy of the respiratory tract and its therapy. A specially interesting contribution was the paper read by G. Wittenberg of Hebrew University dealing with the cause of "halzoun." He said that halzoun is the name given in the Near East to a specific laryngopharyngitis caused by worms. Two kinds of worms have hitherto been considered as producing this condition: (1) leeches of the species *Limnatis nilotica*, which reach the mouth on drinking of contaminated water, and (2) young specimens of a trematode, *Fasciola hepatica*. The latter is a common parasite of the liver in cattle and has a complicated life history in which a water snail is involved as an intermediate host. Infection normally occurs through swallowing microscopic encysted cercariae (metacercariae), which develop in the snail and abound in the water of pools and lakes in which the snails live. The Lebanese investigator Khuri propounded the view that in man in the course of eating insufficiently cooked infected lamb liver the parasite is released and attaches itself to the mouth or adjacent cavities. Khuri attributed to this parasite various disorders and sometimes even death by asphyxiation. Khuri's explanation appears to be doubtful, since it contradicts the normal course of the life history of *Fasciola hepatica*. An additional explanation is suggested by a case of Drs. Marshak and Gorshiev in Tiberias, who extracted an unknown worm from the throat of a patient. This worm proved to be the trematode *Clinostomum complanatum*, a common parasite of fish-eating birds. The birds infect themselves by eating fish which contains encapsulated larvae of the parasite. The case reported is the second on record in man, the other one having been described in Japan. It is suggested that many cases of undetermined "halzoun" might well have been produced in this way by *Clinostomum*.

Diseases Among Immigrants

Jewish Palestine is confronted with a new medical problem consisting in the treatment and medical supervision of new immigrants. J. Meyer opened the discussion on the subject by viewing the fate of the future settlers from a preventive-medical point of view. While in prewar time a selection of the immigrants was possible, Palestinian Jewry is now moved only by the wish to save as many people as possible from European countries, thus imposing on the medical profession of this country the task of coping with a number of new medical problems. The "Children from Yemen," for example, presented a high percentage of trachoma, while the group of "Teheran Children" was especially characterized by their great number of skin diseases. Among 2,150 young immigrants who arrived recently 30 had tuberculosis in comparison to 5 cases among 8,000 earlier young immigrants. Increase of the number of hospital beds and a center for preventive medicine were pointed out as an urgent need. The last mentioned problem was particularly stressed by Gruschka. An organized medical service should preeminently be concerned with early diagnosis and timely institution of therapy, the supervision of particularly exposed groups and the after-treatment of diseases. From a scientific point of view as well as with the object of better cooperation of all participating factors, the hospital should have a central and governing position within this framework of a medical service.

SWITZERLAND

(From Our Regular Correspondent)

GENEVA, Jan. 26, 1945.

Swiss Doctors Do Not Want to Become Civil Servants

In a meeting recently held in Berne, representatives of the Medical Association of each "canton" and of the Central Committee of the Swiss Medical Federation discussed propositions coming from certain circles with a view to organizing the medical profession on a civil service basis. A resolution, unanimously adopted by the meeting, expressed the willingness of all doctors to collaborate loyally in the establishment of a true social insurance system. But the delegates remained persuaded that the suppression of an independent medical body, replaced by medical civil servants with a fixed salary, would mean a leveling of all medical activities and would not prove to be of interest for the patient in the long run. All Swiss doctors are therefore strongly opposed to any attempt to make the medical profession a state organization.

Swiss Medical Aid to Ex-Occupied Countries

Two public health missions have gone to give medical help to Marshal Tito's soldiers in Yugoslavia. They are led by Dr. G. Piderman and by Professor Moser of Zurich and have taken with them medical supplies to the value of 75,000 Swiss francs, surgical apparatus and insecticides. The first reports say that there are absolutely no sanitary facilities in ex-occupied parts of Yugoslavia and that the food situation is frightful. A similar but larger mission is about to start for France with Dr. Henri Tecoz of Lausanne at its head. Dr. Tecoz, who is a fellow of the Royal Society of Medicine, worked in France during the first world war, when he was honored with the Legion of Honor and the Epidemics Medal.

The DDT Substances, a Great Swiss Discovery

Resuming studies began in 1874 by O. Zeidler, three Swiss chemists, Drs. Luger, Martin and Muller, have been able to obtain by synthesis dichlor-diphenyl-trichlormethyl-methane (DDT), a remarkable insecticide which has now been utilized by Allied forces and people of ex-occupied territories in fighting malaria; exanthematic typhus and every insect pest.

A Swiss Tropical Institute

Recently created in Basel, the Tropical Institute has now taken possession of its premises in a fully equipped building. The institute aims at pursuing all scientific studies pertaining to the tropics and at giving practical and special training to Swiss or foreign people who want to go to the colonies.

Penicillin in Switzerland

A small quantity of penicillin has just arrived in Switzerland, where it has been distributed among the ten biggest university clinics. Experiments are in process to study the therapeutic activity of the substance in all infectious diseases.

Marriages

GEORGE WASHINGTON FREEMAN SINGLETON to Miss Minnie Elizabeth Johnson, both of Selma, Ala., November 16.

CHARLES OLIVER HUMPHRIES, Asheville, N. C., to Miss Josephine Henderson of Chapel Hill, December 30.

ROBERT MILTON YOUNGLOVE, Bass Lake, Ind., to Miss Kathleen A. Webber of Chicago, November 14.

NOAH HAMPTON CHILES, Corryton, Tenn., to Miss Aradine Griffin in Louisville, Ky., December 26.

BENSON BERTHEAU ROE, San Francisco, to Miss Jane Facit, St. John of New York, January 20.

ARTHUR W. SHAVER to Miss Lois Hein, both of Davenport, Iowa, November 24.

Deaths

Jacob Morton Mora * Chicago: University of Illinois College of Medicine, Chicago, 1925; in 1918 member of the Students Army Training Corps; assistant professor of surgery at his alma mater; diplomate of the National Board of Medical Examiners; specialist certified by the American Board of Surgery; member of the Chicago Surgical Society and the Chicago Pathological Society; fellow of the American College of Surgeons; interned at the Cook County Hospital; for many years on the courtesy staff of the Passavant Memorial Hospital; consulting surgeon, Kankakee State Hospital, Kankakee, Ill., and attending surgeon at the Mount Sinai Hospital, where he died February 10, aged 44, of dissecting aortic aneurysm with rupture due to arteriosclerosis.

Edward Quin Thornton * Philadelphia; Jefferson Medical College of Philadelphia, 1890; since 1934 emeritus professor of therapeutics at his alma mater, where in 1932 he had been appointed Sutherland M. Prevost professor of therapeutics and where he served at one time as associate and assistant professor of materia medica; member of the Pathological Society of Philadelphia; fellow of the College of Physicians of Philadelphia; associate visiting physician, Pennsylvania Hospital; author of "A Manual of Materia Medica," "Dose Book and Manual of Prescription Writing" and "Medical Formulary"; editor of Tarrard on Treatment and Bruce on Treatment; died in the Jefferson Hospital January 16, aged 78, of carcinoma of the stomach.

Roy Stanley Perkins * Lowell, Mass.; Medical School of Maine, Portland, 1914; specialist certified by the American Board of Radiology, Inc.; member of the New England Roentgen Ray Society and the American College of Radiology; served overseas during World War I; interned at the Salem Hospital, Salem, where he served as radiologist; radiologist and past president of the staff of St. Joseph's Hospital; radiologist and president of the staff of St. Johns Hospital; radiologist at the Josiah B. Thomas Hospital, Peabody, and the Tewksbury State Hospital and Infirmary, Tewksbury; died in Madbury, N. H., December 3, aged 54, of coronary occlusion.

Francis Arthur Glass * Haverstraw, N. Y.; Fordham University School of Medicine, New York, 1914; served overseas during World War I; at one time coroner of Rockland County; served as school physician in Haverstraw and since 1934 health officer of the village of West Haverstraw; chief of the medical staff of local Selective Service Board number 763; visiting physician at the New York Reconstruction Home, West Haverstraw; on the staffs of St. Elizabeth's Hospital, New York, Good Samaritan Hospital, Suffern, and the Nyack Hospital, Nyack, where he died December 14, aged 54, of coronary sclerosis.

Oscar Bruton Darden * Richmond, Va.; Medical College of Virginia, Richmond, 1918; member of the American Psychiatric Association; specialist certified by the American Board of Psychiatry and Neurology, Inc.; formerly vice president of the Tri-State Medical Association, composed of North and South Carolina and Virginia; associate professor of neuropsychiatry at his alma mater; in 1938 was appointed to the state advisory board on mental hygiene; on the staff of the Johnston-Willis Hospital; member of the medical staff of the Westbrook Sanatorium, where he died December 10, aged 53, of coronary occlusion.

C. Wilson West * Reno, Nev.; Rush Medical College, Chicago, 1901; past president of the Nevada State Medical Association and the Washoe County Medical Society; fellow of the American College of Surgeons; lieutenant colonel, U. S. Public Health Service Reserve; head of Procurement and Assignment of Physicians of Nevada; served during World War I; local surgeon, Western Pacific Railway Company; district surgeon, Southern Pacific Railway Company; member of the Washoe General and St. Mary's hospitals; died January 10, aged 68, of hypertensive heart disease and coronary thrombosis.

William Farquhar Shallenberger * Atlanta, Ga.; Johns Hopkins University School of Medicine, Baltimore, 1907; interned at the Johns Hopkins Hospital in Baltimore and later served as surgeon at the Hospital for Women of Maryland at Baltimore; member of the Southern Surgical Association; fellow of the American College of Surgeons; member of the Fulton County Rationing Board; at one time chief of the obstetric and gynecologic service at the Grady Hospital; on the staffs of St. Joseph Infirmary and the Piedmont Hospital, where he died December 16, aged 63, of coronary occlusion.

Thomas Luther Coley * Major, U. S. Army, retired, Bethayres, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; served during World War I; entered the medical corps of the U. S. Army as a major in 1920; served in the Philippines and in the Canal Zone; retired by operation of law on Dec. 31, 1936; life member of the Pathological Society of Philadelphia and fellow of the College of Physicians of Philadelphia; formerly on the staff of the Methodist Episcopal Hospital in Philadelphia; died January 10, aged 75, of cardiac thrombosis and gastric ulcer.

Homer Augustus Alexander * Topeka, Kan.; University of Kansas School of Medicine, Kansas City, 1914; interned at the Kansas City General Hospital; served during World War I; coroner of Shawnee County; died December 24, aged 63, of cerebral hemorrhage.

Jeremiah E. Anderson, McKee, Ky.; Hospital College of Medicine, Louisville, 1907; died in the Baptist Hospital, Louisville, December 22, aged 61, of coronary thrombosis.

Tilford T. Bailey, Port Gibson, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1892; also a druggist; died October 19, aged 88, as the result of a fall.

Charles Tomlinson Baldwin, Derby, Conn.; Bellevue Hospital Medical College, New York, 1883; member of the American Medical Association; died December 13, aged 90, of cerebral thrombosis.

Joachim Ban, West Hartford, Conn.; Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultása, Budapest, Hungary, 1918; died in Boston November 2, aged 52, of coronary heart disease.

Clarence Earl Barcus, Indianapolis; Medical College of Indiana, Indianapolis, 1903; veteran of the Spanish-American War and World War I; died in the Veterans Administration Facility December 20, aged 64, of bilateral tuberculous pneumonia.

William C. Barnard * Seneca, Mo.; Marion-Sims College of Medicine, St. Louis, 1897; member of the staff of the Freeman Hospital, Joplin, where he died January 1, aged 74, of bronchopneumonia.

Charles Elton Blanchard, Youngstown, Ohio; University of Wooster Medical Department, Cleveland, 1902; died in the North Side unit of the Youngstown Hospital January 15, aged 76, following an ileocolostomy.

John R. Campbell, Somerset, Ky.; Louisville National Medical College, Medical Department State University, 1907; died December 20, aged 64, of burns received when his home caught fire.

Hiram Bryan Cloud * Wolf Point, Mont.; Chicago College of Medicine and Surgery, 1917; served during World War I; also postmaster; died October 31, aged 59, of a fractured skull received in an automobile accident and hypostatic pneumonia.

David W. Connally, Antlers, Okla.; Gate City Medical College, Dallas, Texas, 1905; member of the American Medical Association; died in St. Joseph's Hospital, Paris, Texas, November 8, aged 73, of uremia, pyelitis, cystitis and hypertrophy of the prostate.

Austin Pittenger Culbertson, Vickeryville, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1884; died December 23, aged 87, of heart disease.

Milton Mellon De Arman * Miami, Okla.; University of Tennessee Medical Department, Nashville, 1901; formerly mayor of Miami, member of the board of utilities and president of the Security Bank and Trust Company; on the staff of the Miami Baptist Hospital; died in the University Hospital, Columbus, November 4, aged 66, of lymphatic leukemia.

Francis Joseph Dever * Bethlehem, Pa.; Medico-Chirurgical College of Philadelphia, 1902; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; at one time instructor in medicine at his alma mater; served as chief internist at St. Luke's Hospital; died in the U. S. Naval Hospital, Philadelphia, December 30, aged 65, of bronchopneumonia.

Allen Otto Dobbins * Valparaiso, Ind.; Illinois Medical College, Chicago, 1903; formerly vice president of the Porter County Medical Society; died January 12, aged 75, of diabetes mellitus.

Benjamin Perkins Doran * Uniontown, Pa.; Jefferson Medical College of Philadelphia, 1913; served during World War I; died October 7, aged 56, of coronary occlusion and diabetes mellitus.

Luther Elliott Drew, War, W. Va.; McHarry Medical College, Nashville, Tenn., 1923; died November 24, aged 53, of pneumonia.

Winifred Smith Foster, Oakland, Calif.; Boston University School of Medicine, 1897; died in the Highland-Alameda County Hospital November 24, aged 72, of cerebral hemorrhage and a skull fracture received in an automobile accident.

John Martin Frankenburg, Kansas City, Mo.; Kansas Medical College, Kansas City, Kan., 1893; member of the American Medical Association; at one time professor of surgery and clinical surgery at the University Medical College of Kansas City; past president of the Jackson County Medical Society; at one time superintendent of the General Hospital; on the staff of St. Joseph Hospital, where he died December 25, aged 75, of carcinoma.

Samuel Orlin Gantt * Centerburg, Ohio; Starling Medical College, Columbus, 1890; died December 31, aged 83, of coronary occlusion.

James Miner Gibbons, Bismarck, N. D.; Northwestern University Medical School, Chicago, 1908; died in a local hospital November 24, aged 63, of cirrhosis of the liver.

Albert Edward Gibson, Los Gatos, Calif.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1887; died in San Jose December 8, aged 83, of a fractured right hip, shock and arteriosclerosis.

Fred Chambers Goddard, Uxbridge, Mass.; Tufts College Medical School, Boston, 1917; member of the American Medical Association; died in Milford November 7, aged 51, of coronary thrombosis.

Abram Comingo Griffith * Kansas City, Mo.; University of Kansas School of Medicine, Kansas City, 1906; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians and member of the board of governors; major, medical reserve corps, U. S. Army, not on active duty; on the staffs of St. Luke's and St. Joseph hospitals; died in Shawnee, Kan., November 9, aged 63.

Samuel Frank Hamilton, Springfield, Ky.; Louisville Medical College, 1905; member of the American Medical Association; past president of the Washington County Medical Society; formerly county health officer; died December 31, aged 62, of carcinoma.

Frank George Heinig, Batavia, N. Y.; University and Bellevue Hospital Medical College, New York, 1925; interned at St. Vincent's Hospital of the City of New York; medical rating specialist at the Veterans Administration Facility; served during World War I; captain, medical corps, Army of the United States, not on active duty; died December 31, aged 47, of coronary thrombosis.

James A. Hill * Jefferson City, Mo.; Ensworth Medical College, St. Joseph, 1905; for many years secretary and at one time president of the Cole County Medical Society; on the staff of St. Mary's Hospital; died December 9, aged 74, of coronary thrombosis.

Otis Walter Hinshaw, Long Beach, Calif.; Rush Medical College, Chicago, 1901; formerly on the staff of the Randolph County Hospital, Winchester, Ind.; died December 12, aged 69, of cerebral thrombosis.

Henderson Looney Holman, Ozark, Ala.; Memphis (Tenn.) Hospital Medical College, 1898; member of the American Medical Association; served as chairman of the city school board and as city councilman; died December 30, aged 70, of angina pectoris.

George Edwin Hourn * St. Louis; Washington University School of Medicine, St. Louis, 1913; assistant professor of clinical otolaryngology at his alma mater; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology and the American Otolaryngological Association; on the staffs of the Children's Hospital, St. Louis, and Baptist Hospital, St. Luke's Hospital, St. Louis, where he died December 10, aged 66, of congestive heart disease.

Albert Huber * Kansas City, Kan.; University Medical College of Kansas City, 1904; on the staffs of the Bethany Hospital, St. Margaret's Hospital and the Providence Hospital, where he died December 4, aged 64, of coronary occlusion.

D. Columbus Hyder, Donna, Texas; University of the South Medical Department, Sevanee, Tenn., 1909; member of the American Medical Association; served during World War I; for two terms secretary of the Childress-Collingsworth Hall Counties Medical Society; died October 8, aged 69, of carcinoma of the liver.

Francis Bartlett Kellogg, Los Angeles; Yale University School of Medicine, New Haven, Conn., 1886; New York Homeopathic Medical College and Hospital, New York, 1887; fellow of the American College of Surgeons; died in Pasadena October 25, aged 89.

Floyd Franklin Kirby * Waco, Texas; University of Louisville Medical Department, Louisville, Ky., 1917; formerly on the staff of the Scott and White Hospital, Temple; on the staff of the Hillcrest Hospital, where he died November 11, aged 54, of gunshot wounds of the chest and abdomen (homicide).

George C. Kolb, Cincinnati; Barnes Medical College, St. Louis, 1898; died in the Good Samaritan Hospital December 13, aged 75, of acute peripheral circulatory failure.

Orion Frank Konantz, Los Angeles; University of Pennsylvania Department of Medicine, Philadelphia, 1905; died November 29, aged 65, of heart disease.

Earl Rudolph Lehnerr * Boston; Harvard Medical School, Boston, 1931; on the staffs of the New England Deaconess and Palmer Memorial hospitals; associated with the allergy clinic of the Massachusetts General Hospital; died December 4, aged 41, of lymphoma.

Robert Willis Lenker, Schuylkill Haven, Pa.; Jefferson Medical College, Philadelphia, 1908; member of the American Medical Association; served during World War I; examining physician for the schools of Schuylkill Haven; deputy coroner of Schuylkill Haven and South Manheim township; served on the staff of the Pottsville Hospital, Pottsville; died in the Jefferson Hospital, Philadelphia, December 3, aged 64, of cerebral hemorrhage.

Eugene J. Luippold * Weehawken, N. J.; Baltimore Medical College, 1907; past president of the Hudson County Medical Society; fellow of the American College of Surgeons; on the staff of the Christ Hospital, Jersey City; past president of the Rotary Club of Union City, a director of the First National Bank and member of the chamber of commerce; died December 16, aged 58, of melanocarcinoma.

John William Malcolm, Lawton, Okla.; Kentucky School of Medicine, Louisville, 1895; died in Oklahoma City October 22, aged 74.

Saló Matheus, Buffalo; Julius-Maximilians-Universität Medizinische Fakultät, Würzburg, Bavaria, Germany, 1891; died in the Sisters Hospital December 7, aged 78, of hypostatic pneumonia and biliary obstruction.

Herbert Elliott McDowell, Spartanburg, S. C.; Atlanta Medical College, 1893; member of the American Medical Association; died October 31, aged 74.

Francis E. Mingo, Hugo, Minn.; Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1905; member of the American Medical Association; served as health officer of Hugo and Centerville; local surgeon for the Northern Pacific Railroad; medical examiner for various insurance companies; on the staffs of the Bethesda Hospital, St. John's Hospital and St. Joseph's Hospital, St. Paul, where he died October 29, aged 63, of cerebral hemorrhage.

Otho Lee Monroe * New York; Columbia University College of Physicians and Surgeons, New York, 1908; for many years served as instructor of otolaryngology at his alma mater; specialist certified by the American Board of Otolaryngology; on the staffs of the New York Foundling Hospital and the Manhattan Eye, Ear and Throat Hospital, where he died December 11, aged 62, of carcinoma.

Richard Mooney, Henryetta, Okla. (licensed in Oklahoma under the act of 1908); died November 17, aged 73, of heart disease.

Daniel Jackson Murphy, Vaiden, Miss. (licensed in Mississippi in 1908); died in the Jackson Infirmary, Jackson, November 30, aged 63, of cerebral hemorrhage and cardiovascular disease.

Parker Herbert Murphy * Rochester, N. Y.; Albany (N. Y.) Medical College, 1896; examining physician for local board number 544; died in the Genesee Hospital December 18, aged 76, of coronary thrombosis.

John Joseph Myers, Fallon, Nev.; College of Physicians and Surgeons of San Francisco, 1899; died in Angwin, Calif., November 29, aged 77, of cerebral hemorrhage.

Alice C. Nivison, Philadelphia; the Hahnemann Medical College and Hospital, Chicago, 1887; died in the Hahnemann Hospital December 30, aged 86, of arteriosclerotic cardiovascular disease.

Emil Zola Ossen, Quincy, Mass.; State University of Iowa College of Medicine, Iowa City, 1931; member of the American Medical Association; interned at the Sinai Hospital, Baltimore; formerly resident physician at the Norfolk County Hospital, Braintree, Mass.; on the staffs of the Quincy City Hospital, the Beth Israel Hospital in Boston and the Milton Hospital in Milton; died December 16, aged 38, of coronary artery disease.

Rowland Gardiner Paynter * Georgetown, Del.; University of Pennsylvania Department of Medicine, Philadelphia, 1898; president of the Farmers Bank of Delaware; president of the Kent County Mutual Life Insurance Company; vice president of the Delaware, Maryland and Virginia Railroad Company; trustee of the Delaware State Hospital, Farnhurst, and the University of Delaware; died in the University of Pennsylvania Hospital, Philadelphia, December 16, aged 70, of hepatic failure.

Charles Adelbert Perry * Albany, N. Y.; Albany Medical College, 1914; served during World War I; major, special reserve, U. S. Public Health Service; chief of the department of medicine, Memorial Hospital; died suddenly December 24, aged 56, of heart disease.

Hazel Graham Petrie, Louisville, Ky.; Kentucky School of Medicine, Louisville, 1894; for many years physician for the Louisville and Nashville Railroad; died December 27, aged 72, of uremia.

Robert Harry Phillips * Lansing, Mich.; University of Michigan Medical School, Ann Arbor, 1924; at one time instructor of internal medicine at his alma mater; interned and served a residency at the University Hospital in Ann Arbor; formerly secretary of the Ingham County Medical Society; on the staffs of the Edward W. Sparrow Hospital and St. Lawrence Hospital, where he died December 19, aged 46, of posterior coronary occlusion.

Robert Simmons Phillips, Providence, R. I.; New York Homeopathic Medical College and Hospital, New York, 1900; member of the American Medical Association; died October 23, aged 71, of coronary thrombosis.

Wilfrid S. Picotte * Ishpeming, Mich.; School of Medicine and Surgery of Montreal, Que., Canada, 1896; served as president of the Marquette-Alger Counties Medical Society; for many years city health officer and county physician; served on the county board of supervisors and as president of the Peninsula Bank; trustee of the Morgan Heights Sanatorium, Marquette; died December 11, aged 70, of heart disease.

Donald Grant Ralston * McConnsville, Ohio; Ohio State University College of Medicine, Columbus, 1918; served during World War I; served as mayor, member of the board of public affairs and member and president of the county board of health; resident medical director of the Rocky Glen Sanatorium; died in Boston December 2, aged 49, of coronary occlusion.

Clarence Addison Rathbun, St. Cloud, Minn.; Bennett Medical College, Chicago, 1914; member of the American Medical Association; died in Maple Grove Township November 15, aged 53, of an accidental gunshot wound received while hunting.

Albert S. Reed, New York; New York Homeopathic Medical College and Hospital, New York, 1895; member of the local school board; died in St. John's Hospital December 14, aged 75, of heart disease.

James William Reed, Belfast, Tenn.; Vanderbilt University School of Medicine, Nashville, 1900; died in Nashville November 7, aged 71.

William H. Rentzheimer * Hellertown, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1882; past president of the Northampton County Medical Society; chairman and examiner of the Bethlehem Draft Board number 3 during World War I; served for twenty-one years as secretary and director of the school district; died in St. Luke's Hospital December 6, aged 84, of myocardial degeneration and ruptured duodenal ulcer.

Calvin R. Rickenbaugh * Carlisle, Pa.; University of Pittsburgh School of Medicine, 1910; for many years a member of the board of health; on the staff of the Carlisle Hospital; died December 29, aged 58, of heart disease.

William O. Rickfort * Chicago; Rush Medical College, Chicago, 1902; one of the original members of the staff of the Evangelical Hospital of Chicago, where he died December 13, aged 69, of coronary thrombosis.

Byron Sanborn * Topsfield, Mass.; Dartmouth Medical School, Hanover, N. H., 1900; for many years associate medical examiner; since 1929 school physician; died December 20, aged 70, of coronary occlusion.

David E. Saxton, Tampa, Fla.; Eclectic Medical Institute, Cincinnati, 1883; member of the city council; died December 14, aged 93, of pneumonia.

Nicholas Julius Scarito * Lawrence, Mass.; George Washington University School of Medicine, Washington, D. C., 1912; medical examiner of the Fifth District; on the staff of the Lawrence General Hospital; jail physician; died December 3, aged 65, of coronary thrombosis.

Emil Arnold Schlageter * Chicago; Chicago College of Medicine and Surgery, 1914; associated with the Chicago Health Department as a diagnostician (supervising health officer) for many years; served during World War I; died January 18, aged 61, of tuberculosis.

Michael Joseph Shealey, Anchorage, Ky.; New York Homeopathic Medical College and Flower Hospital, New York, 1912; formerly on the staffs of various Veterans Administration facilities; served as senior physician at the Central State Hospital, Lakeland; died December 13, aged 63, of heart disease.

Wesley Morley Sherin * Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; on the staff of the Jackson Park Hospital; died December 17, aged 69, of coronary occlusion.

Alfred Dennis Simington, Philadelphia; Meharry Medical College, Nashville, Tenn., 1900; formerly on the staffs of the Veterans Administration facilities in Mobile and Tuskegee, Ala.; died October 2, aged 75, of coronary occlusion.

Justin C. Simpkins, Glasgow, Mont.; Medical College of Indiana, Indianapolis, 1896; died November 26, aged 89, of myocardial degeneration and senility.

Harold Lamberson Sippy * Winnetka, Ill.; Northwestern University Medical School, Chicago, 1928; interned at the Wesley Memorial Hospital; formerly a resident physician at the Neurological Hospital in New York; on the staff of St. Luke's Hospital, Chicago; found dead February 15, aged 44.

Alfred Hudler Smith, Springfield Gardens, N. Y.; Long Island College Hospital, Brooklyn, 1905; member of the American Medical Association; on the staff of the Jamaica (N. Y.) Hospital, where he died December 9, aged 65, of bleeding pyloric ulcer and coronary sclerosis.

Harve Bayard Spangler, Salt Lake City; St. Louis University School of Medicine, 1913; served during World War I; died in the Veterans Administration Facility November 9, aged 58, of cardiac decompensation and coronary sclerosis.

Nicholas D. Stigall, Burnside, Ky.; University of Louisville Medical Department, 1891; died December 2, aged 81, of chronic myocarditis.

Miles Edwin Stover, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1904; a member of the American Medical Association; served during World War I; died in St. Margaret's Hospital December 23, aged 70, of cerebral embolism.

Charles W. Sweeney, Bohon, Ky.; Kentucky School of Medicine, Louisville, 1900; past president of the Mercer County Medical Society; died December 19, aged 71, of coronary heart disease.

Walter Boivin Taylor * Pickerington, Ohio; Ohio Medical University, Columbus, 1902; president of the Pickerington Bank; died December 31, aged 67, of carcinoma of the liver.

Frank Carleton Thomas, Lexington, Ky.; Johns Hopkins University School of Medicine, Baltimore, 1919; member of the American Medical Association; specialist certified by the American Board of Ophthalmology; on the staffs of the Good Samaritan and St. Joseph's hospitals; died December 2, aged 49, of heart disease and hypertension.

Sam A. Thompson, Mount Vernon, Ill.; Barnes Medical College, St. Louis, 1897; member of the American Medical Association; served as president of the Association of Surgeons of the Chicago and Eastern Illinois Railroad; formerly owner and medical director of the Mount Vernon Hospital; died in the Barnes Hospital, St. Louis, December 4, aged 75, of hypertensive cardiovascular disease.

Charles B. Toms, Newberry, Mich.; Detroit College of Medicine, 1902; member of the American Medical Association; at one time secretary of the Luce County Medical Society; assistant medical superintendent of the Newberry State Hospital; died December 26, aged 69, of coronary thrombosis.

Bernard Tonsky, Philadelphia; Maryland Medical College, Baltimore, 1911; member of the American Medical Association; died in the Mount Sinai Hospital December 15, aged 61, of coronary thrombosis.

Harry Wallis Trask * West Boylston, Mass.; University of Vermont College of Medicine, Burlington, 1904; member of the American Medical Association; on the staff of the Holden District Hospital, Holden; for many years school physician in West Boylston; died November 5, aged 63.

William Henry Veenboer * Grand Rapids, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; fellow of the American College of Surgeons; visiting surgeon, Blodgett and Butterworth hospitals; chief of staff and consulting surgeon at St. Mary's hospital, where he died December 21, aged 66, of gastric carcinoma.

A. William Vogt, New Alsace, Ind.; Missouri Medical College, St. Louis, 1884; died in the Margaret Mary Hospital, Batesville, December 3, aged 87, of carcinoma of the rectum with metastases.

John N. Volicos, Chicago; National Medical University, Chicago, 1896; died in a sanatorium in Hinsdale, Ill., December 24, aged 78, of cerebral hemorrhage and arteriosclerosis.

Matthew D. Vosburgh, St. Louis; Kansas City (Mo.) Homeopathic Medical College, 1899; died November 17, aged 80.

Della Mary Walker, Salem, Ohio; Woman's Medical College of Pennsylvania, Philadelphia, 1894; died December 23, aged 80, of hemiplegia due to cerebral accident.

Herbert Walker, Aurora, Ill.; University of Wooster Medical Department, Cleveland, 1893; fellow of the American College of Surgeons; served during World War I; died in the Veterans Administration Facility, Hines, December 9, aged 77, of carcinoma.

Claudius Meyer Warsaw, New York; College of Physicians and Surgeons, New York, 1885; also a pharmacist; served as diagnostician for the city health department; retired in 1939 as medical examiner of the Metropolitan Life Insurance Company after many years' service; died December 30, aged 84, of myocarditis.

of the Vermilion County Medical Society; served during World War I; on the staffs of St. Elizabeth and Lake View hospitals, at one time on the staffs of the Battle Mountain Sanitarium, Hot Springs, S. D., and the National Military Home, now known as the Veterans Administration Facility, where he died December 30, aged 63, of arteriosclerosis.

Bertrand K. Wilbur, La Jolla, Calif.; Hahnemann Medical College and Hospital of Philadelphia, 1891; organizer and for many years president of the Lower Merion (Pa.) Board of Health; died in the Scripps Memorial Hospital January 2, aged 75, of angina pectoris.

William Leigh Williamson, Bayonne, N. J.; New York Homeopathic Medical College and Flower Hospital, New York, 1916; member of the American Medical Association; past president of the Hudson County Medical Society; physician for the Hudson County Mosquito Control Association; on the staff of the Hudson Contagious Disease Hospital, Secaucus, and the Bayonne Hospital; formerly a member of the city board of education and chief medical inspector of the public school system; died December 28, aged 68.

William Reynolds Wilson, Villanova, Pa.; Jefferson Medical College of Philadelphia, 1888; chairman of the gynecologic section of the College of Physicians and member of the Philadelphia Obstetrical Society; served as chief of the women's



CAPT. LUTHER SEXTON FORTENBERRY
M. C., A. U. S., 1908-1944



CAPT. ALFRED M. DUSCHATKO
M. C., A. U. S., 1918-1944



CAPT. ROBERT D. MCKENZIE
M. C., A. U. S., 1910-1944

William Pinkney Webster, Oxford, Miss. (licensed in Mississippi in 1925); member of the American Medical Association; died December 14, aged 74, of heart disease.

Edward James Wheatley, Danville, Ill.; Drake University College of Medicine, Des Moines, Iowa, 1910; past president

dispensary of the German Hospital, Philadelphia, visiting physician, Lying-In Hospital, Philadelphia, and staff physician in the maternity department of the Presbyterian Hospital, Philadelphia; died in Bryn Mawr December 18, aged 81, of cerebrovascular disease.

KILLED IN ACTION

Luther Sexton Fortenberry, Houma, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1934; member of the American Medical Association; served an internship at the Charity Hospital, New Orleans, and a residency at the Eye, Ear, Nose and Throat Hospital in New Orleans; specialist certified by the American Board of Otolaryngology; commissioned a captain in the medical corps, Army of the United States, on July 13, 1942; began active duty on Sept. 10, 1942; on entering the Army Air Corps was sent to Tarrant Field, Fort Worth, Texas, where he was assigned to Brooks Field, San Antonio, Texas, serving for two years as chief of the Eye, Ear, Nose and Throat Clinic; received overseas orders in September 1944 for the 65th Field Hospital unit, attached to General Patton's Armored Division; died in France Nov. 6, 1944, aged 35, as the result of an explosion of an enemy mine (nonbattle).

Alfred Maloch Duschatko, Scarsdale, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1942; diplomate of the National Board of Medical Examiners; interned at the Presbyterian Hospital in New York; commissioned a first lieutenant in the medical corps, Army of the United States, on June 2, 1942; began active duty on July 3, 1943; later promoted to captain; killed in action in Belgium Dec. 16, 1944, aged 26.

Robert Douglas McKenzie, Albany, Ga.; University of Rochester School of Medicine and Dentistry, Rochester, N. Y., 1935; member of the American Medical Association; formerly an intern at the Grady Hospital, Emory University Division; served a residency in otology, laryngology and rhinology at the Grady Hospital, Atlanta; commissioned a captain in the medical corps, Army of the United States, on Nov. 11, 1942; killed in action in the Southwest Pacific area Oct. 27, 1944, aged 34.

Medical Examinations and Licensure

Correspondence

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in *THE JOURNAL*, February 24 page 483.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 26-28. Sec. Dr. B. F. Austin, 519 Dexter Ave., Montgomery.
ALASKA: Juneau, March. Sec. Dr. W. M. Whitehead, Box 561, Juneau.
ARIZONA: Phoenix, April 3-4. Sec. Dr. J. H. Patterson, 826 Security Bldg., Phoenix.
ARKANSAS: * Eclectic Little Rock, June 7. Sec. Dr. C. H. Young, 1415 Main St., Little Rock. Medical Little Rock, June 7-8. Sec. Dr. D. L. Owens, 701 Main St., Little Rock.
CALIFORNIA: * Oral, Los Angeles, March 3. Written, San Francisco, July 9-12. Sec. Dr. Frederick N. Scatena, 1020 N. St., Sacramento 14.
COLORADO: * Denver, April 3-6. Final date for filing application is March 19. Sec. Dr. J. B. Davis, 831 Republic Bldg., Denver.
CONNECTICUT: * Homoeopathic, Derby, March 12-13. Sec. Dr. J. H. Evans, 1488 Chapel St., New Haven. Medical Examination, March 13-14. Endorsement, March 27. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven.
DELAWARE: Examination, Dover, July 10-12. Reciprocity, Dover, July 17. Sec., Medical Council of Delaware, Dr. J. S. McDaniel, 229 S. State St., Dover.
DISTRICT OF COLUMBIA: * Reciprocity, Washington, March 12. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington 1.
FLORIDA: * Jacksonville, June 25-26. Sec. Dr. Harold D. Van Schaack, 2736 S. W. Seventh Ave., Miami 36.
IDAHO: Boise, July 10. Dir., Bureau of Occupational Licenses, Miss Agnes Barnhart, 355 State Capitol Bldg., Boise.
ILLINOIS: Chicago, April 3-5. Superintendent of Registration, Department of Registration and Education, Mr. Philip Harman, Springfield.
KENTUCKY: Louisville, June 18-20. Sec., State Board of Health, Dr. Philip E. Blackerby, 620 S. Third St., Louisville 2.
MAINE: Portland, March 13-14. Sec., Board of Registration of Medicine, Dr. A. P. Leighton, 192 State St., Portland.
MARYLAND: Medical, Baltimore, June 19-20. Sec. Dr. J. T. O'Nara, 1215 Cathedral St., Baltimore. Homoeopathic, Baltimore, June 19-20. Sec. Dr. J. A. Evans, 612 W. 40th St., Baltimore.
MASSACHUSETTS: Boston, March 13-16. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413 F. State House, Boston.
MINNESOTA: * Minneapolis, April 17-19. Sec. Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul 2.
MONTANA: Helena, April 2-4. Sec. Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.
NEW HAMPSHIRE: Concord, March 8-9. Sec., Board of Registration in Medicine, Dr. D. G. Smith, 77 Main St., Nashua.
NEW JERSEY: Trenton, June 19-20. Sec. Dr. E. S. Hallinger, 28 W. State St., Trenton.
NEW MEXICO: * Santa Fe, April 9-10. Sec. Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.
NORTH DAKOTA: Grand Forks, July 3. Sec. Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.
OHIO: Endorsement, Columbus, April. Columbus, June. Sec. Dr. H. M. Platter, 21 W. Broad St., Columbus.
OKLAHOMA: * Oklahoma City, June 14-16. Sec. Dr. J. D. Osborn, Jr., Frederick.
PENNSYLVANIA: April 10-13. Act. Sec., Bureau of Professional Licensing, Department of Public Instruction, Mrs. M. G. Steiner, 358 Education Bldg., Harrisburg.
RHODE ISLAND: * Providence, April 5-6. Chief Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.
SOUTH CAROLINA: Columbia, June 25-27. Sec. Dr. N. B. Heyward, 1329 Blandin St., Columbia.
SOUTH DAKOTA: * Pierre, July 17-18. Sec. Medical Licensure, State Board of Health, Dr. Gilbert Cottam, State Capitol, Pierre.
TEXAS: Galveston, June 4-6. Sec. Dr. T. J. Crowe, 918 20 Texas Bank Bldg., Dallas 2.
VERMONT: Burlington, June. Sec. Dr. F. J. Lawless, Richford.
VIRGINIA: * Richmond, June 20-23. Sec. Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.
WASHINGTON: * Seattle, July 16-18. Sec., Department of Licenses, Miss Nell Adams, Olympia.
WISCONSIN: * Milwaukee, June 26-28. Sec. Dr. C. A. Dawson, Tremont Bldg., River Falls.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

COLORADO: Denver, March 7-8. Sec., Dr. Luther B. Starks, 1459 Ogden St., Denver.
DISTRICT OF COLUMBIA: Washington, April 2-24. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington 1.
FLORIDA: Deland, June 1. Final date for filing application is May 17. Sec. Dr. J. F. Conner, John B. Stetson University, Deland.
IOWA: Des Moines, April 10. Dir., Division of Licensure and Registration, Mr. H. W. Greife, Capitol Bldg., Des Moines.
MICHIGAN: Ann Arbor and Detroit, May 11-12. Sec. Miss Elvise Ielcau, 101 N. Walnut St., Lansing.
MINNESOTA: Minneapolis, April 3-4. Sec. Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis 14.
NEBRASKA: Omaha, May 1-2. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln.
OKLAHOMA: Oklahoma City, April 9. Sec. Dr. J. D. Osborn, Jr., Frederick.
OREGON: Portland, March 3. Sec., Board of Higher Education, Mr. C. D. Byrne, University of Oregon, Eugene.
SOUTH DAKOTA: Yankton, June 19. Sec. Dr. G. M. Evans, Yankton.
TENNESSEE: Memphis, March 27-28. Sec. Dr. O. W. Hyman, 874 Union Ave., Memphis.
WISCONSIN: Madison, April 7. Sec. Professor R. N. Bauer, 152 W. Wisconsin Ave., Room 834, Milwaukee 3.

ATYPICAL, VIRAL PNEUMONIA OR VIROID PNEUMONIA?

To the Editor:—It is fortunate that lymphocytic choriomeningitis, first called aseptic meningitis, was not called atypical meningitis, or that epidemic nausea, vomiting and diarrhea (*THE JOURNAL*, January 6, p. 1) was never called atypical dysentery. In naming a disease or syndrome, atypical is as undesirable as the prefixes pseudo, meta or para.

Controversy on terminology may be unimportant in the face of many more pressing matters, but in regard to the disease now commonly called atypical pneumonia it is unfortunate that a better name is not generally adopted. The term primary atypical pneumonia was used by Cole in his De Lamar Lectures of 1927-1928 to include all primary forms of pneumonia clinically and bacteriologically different from typical pneumococcal lobar pneumonia. The term in this sense included pulmonary infections caused by pneumococci, streptococci, staphylococci, other bacteria and those of unknown cause. Any pneumonia, therefore, different from the clinical lobar form is atypical.

The cumbersome term primary atypical pneumonia of unknown etiology as proposed by the Surgeon General of the Army to name the disease in question conforms with this scheme if the whole term is used, but its length causes the undesirable contraction to atypical pneumonia without the necessary qualifying phrase. In Webster's Universal Unabridged Dictionary, atypical means having no type, devoid of typical character, which certainly is inappropriately applied to a disease like atypical pneumonia, now said to be by far the most important kind of pneumonia in the Army (*Am. J. M. Sc.* 209:55 [Jan.] 1945). The adjective gives rise to the use of absurd compounds like "typical atypical." In a recent paper (*Am. J. M. Sc.* 209:48 [Jan.] 1945) one author, the title of whose paper includes the words primary atypical pneumonia, avoids this difficulty by writing "a typical case of 'virus' pneumonia." I have not yet encountered "atypical atypical."

The term nonbacterial pneumonia has been used for the pneumonic forms, but again it is a negative one like atypical pneumonia and indicates something which is not. Since the first description of the disease as an entity (An Acute Infection of the Respiratory Tract with Atypical Pneumonia: A Disease Entity Probably Caused by a Filtrable Virus, *THE JOURNAL*, Dec. 24, 1938, p. 2377), which included both pneumonic and nonpneumonic forms of the disease, the mass of evidence has favored, but never quite proved, a filtrable virus or viruses to be the cause in most cases, and since recent experiments show that the disease can be transmitted by filtered secretions (*THE JOURNAL*, January 20, p. 146) why not use a positive term such as viral pneumonia, or virus-like pneumonia, or, better still, viroid pneumonia, which means the same thing? Francis (*Canad. J. Pub. Health* 35:49 [Feb.] 1944) objects to "virus pneumonia" as connoting an entity of known cause, but really it is no more definitive than the broad term bacterial or even coccal. Grammatically, the adjective form viral is preferable to virus. The adjective viroid should not offend those who still object to virus or viral pneumonia but would convey the meaning desired and, if used alone as a noun, could designate both the pneumonic and nonpneumonic forms. The use of the suffix oid (likeness or resemblance) has precedent in naming diseases such as typhoid and varioloid. Eventually, when the specific cause or causes are found, a name or names can be coined to include both pneumonic and nonpneumonic forms of the disease. The names of influenza, ornithosis and psittacosis illustrate the point, as they include various clinical forms of the respective entities. At any rate, atypical pneumonia is a poor name for the important disease now extant.

HOPART A. REIMANN, M.D., Philadelphia.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1935 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

208:701-830 (Dec.) 1944

*Myasthenia Gravis Treated with Large Doses of Neostigmine Methylsulfate, Intramuscularly and Intravenously, and with Neostigmine Bromide Orally. H. R. Viets.—p. 701.

Purulent Meningococcal Arthritis. W. P. Boger.—p. 708.

Sarcoidosis of Boeck: Metabolic Studies of 3 Cases. B. M. Stuart.—p. 712.

Electrophoretic Analysis of Plasma Proteins in Hyperthyroidism and Hypothyroidism. Lena A. Lewis and E. P. McCullagh.—p. 727.

Aspiration Biopsy of Thyroid in Evaluation of Thyroid Dysfunction. R. F. Lipton and M. S. Abel.—p. 736.

Cold Hemagglutinins in Primary Atypical Pneumonia and Other Respiratory Infections. By Commission on Acute Respiratory Diseases.—p. 742.

*Concomitant Administration of Sulfathiazole and Quinine or Atabrine. B. K. Harned and J. N. Etteldorf.—p. 750.

Effect of Quinidine on Mortality of Rats with Experimental Myocardial Injury. W. C. Thomas and T. R. Harrison.—p. 756.

Neostigmine in Myasthenia Gravis.—A patient with myasthenia gravis in Viets's clinic was maintained on a daily intake of twenty-five tablets (375 mg.) of neostigmine each twenty-four hours for more than two years without untoward effects. The average daily intake of 45 patients in the clinic was 163.5 mg. in twenty-four hours. These doses greatly exceed the 45 mg. usually recommended. There were no ill effects from taking these amounts. The patients did not become tolerant to the drug, and, when spontaneous remissions appeared, were able to reduce their maintenance intake quickly or to omit the drug entirely for varying periods of time. Neostigmine is relatively less toxic than was originally considered. The amount of neostigmine methylsulfate given parenterally also greatly exceeds the dose ordinarily used. One patient on entering the hospital was incapable of swallowing neostigmine bromide, and parenteral medication was begun. At first 1 mg. of neostigmine methylsulfate was injected intramuscularly every two or three hours. As this was insufficient to prevent attacks of dyspnea the dose was gradually increased to hourly injections of 1 mg. or 1.5 mg. One day he received 31 mg. of neostigmine methylsulfate. Three mg. of this total was given each day intravenously in 1,500 cc. of glucose solution. As the patient's general condition slowly improved, swallowing became possible. Three weeks after entrance to the hospital the intravenous medication was stopped and administration of neostigmine bromide orally was slowly substituted for some of the intramuscular and intravenous injections. Over a period of five weeks treatment by mouth was gradually extended until at the end of eight weeks the patient was maintained on oral neostigmine bromide, as he had been three months before entering the hospital. This was the first case in which the intravenous use of neostigmine methylsulfate was tried. It was found that the drug was well tolerated, it could be added to glucose solution, and other forms of medication could be used in the same intravenous preparation. When given over a period of hours, the same amount could be used as was given intramuscularly. Using the drip method, 1.5 mg. could be given in one hour. Subsequently, in other patients this dose has been doubled without ill effects. Use of neostigmine intravenously opens up a new field for emergency treatment and lately has been frequently adopted for this purpose. When patients are taking more neostigmine than is needed to inhibit the cholinesterase, muscular fibrillations or fasciculations will appear as evidence of cholinergic overstimulation of the muscular skeletal system.

In addition, salivation, a lowering of the heart rate and stimulation of peristaltic activity, with or without cramps, will be noted. The symptoms of overdosage usually respond to atropine sulfate.

Concomitant Administration of Sulfathiazole and Quinine or Atabrine.—Harned and Etteldorf point out that in malarial districts the frequent necessity for the concurrent administration of antimalarials and sulfonamides would appear to demand an answer to the question of possible incompatibilities between these substances. The authors report data on the concomitant administration of sulfathiazole and quinine or atabrine to 99 volunteer hospitalized patients. The results obtained from these tests indicate that the incidence of unfavorable reactions, with the possible exception of vomiting, is not increased by the concomitant administration of sulfathiazole and quinine or atabrine. The highest doses studied were 6 Gm. of sulfathiazole daily for seven days, 2 Gm. of quinine bisulfate for the same period and 0.3 Gm. of atabrine daily for five days. The combination of drugs produced no detectable changes in the amount of hemoglobin or the total white blood count. Quinine and atabrine produced only minor changes in the free and total sulfathiazole in the blood and in the urine.

American J. Obstetrics and Gynecology, St Louis

48:774-898 (Dec.) 1944

Relationship of Granulosa Cell Tumors of Ovary to Endometrial Carcinoma. C. B. Ingraham, W. C. Black and E. K. Rutledge.—p. 760.

*Minimal Histologic Changes in Biopsies to Justify Diagnosis of Cervical Cancer. R. W. TeLinde and G. Galvin.—p. 774.

Second Stage of Labor: The Descent Phase. L. A. Catkins.—p. 796.

Pathology of Malignant Neoplasm of Cervix Coincident with Pregnancy. C. B. Maino, A. C. Broders and R. D. Mussey.—p. 806.

Deaths in Gynecology. H. E. Miller.—p. 824.

Analysis of 101 Fatalities from Ectopic Pregnancy. P. F. Williams and J. D. Corbit.—p. 841.

Sodium Pentothal Anesthesia in Obstetrics. L. M. Hellman, L. B. Shetles, C. P. Manahan and N. J. Eastman.—p. 851.

Report of First 50 Cases of Ovarian Tumor Registry Conducted by American Gynecological Society. E. Novak.—p. 861.

Diagnosis of Cervical Cancer.—TeLinde and Galvin are concerned with the extremely early malignant lesions which are not infrequently called benign at a time when they could be cured by surgery or by irradiation. They call attention to the earliest histologic changes found in biopsies which have, in these cases, constituted the warning signal which has led to the ultimate diagnosis of cancer. One or more biopsies were taken from all of the cervixes in this series. In approximately half of the cases, several gynecologic pathologists were unwilling to make the diagnosis of cancer from the changes noted in the biopsy specimens. Since in many of the cases hysterectomy was indicated because of fibroids or functional bleeding, it was easy to make the decision to perform a total hysterectomy. In all instances the entire cervix was cut into blocks, and in many cases much careful searching had to be done before an area of actual invasion was found. In 10 out of 11 cases the authors found, after removal of the cervixes, absolute microscopic evidence of invasive carcinoma. In the eleventh case the only area of invasion was found in a biopsy specimen, but the removed cervix showed extensive changes in the surface epithelium such as were seen in the biopsies in the other cases. They do not advocate surgery rather than irradiation in these extremely early carcinomas. In the early microscopic lesions no one has had sufficient experience to be dogmatic in his preference for either surgery or irradiation. It is probable that the incidence of cures will be high by either surgery or irradiation. In this series the authors have performed total hysterectomy in all cases except 1. In this 1 exception the cervix was amputated during a Manchester operation. Following the discovery of early carcinoma in the amputated cervix, irradiation was instituted. The authors have favored surgery in order to obtain the cervix for study so as to substantiate or disprove the suspicion of cancer. Hysterectomy was favored in order to learn whether these early lesions can be cured with the conservation of one ovary. The average age of these patients was 36 years. Since the ovaries are involved late in cervical cancer, ovarian preservation may prove permissible in this group of cases. All of the 16 patients who were the subjects of this report are well, but that fact is of no statistical significance since the longest time that has elapsed since hysterectomy is four years.

American Journal of Public Health, New York

34:1217-1316 (Dec) 1944

- Content and Administration of Medical Care Program: Brief of Report on Medical Care in National Health Program J W Mountin—p 1217
Id Unmet Health Needs I S Falk—p 1223
Id National Health Service: Scope Financing and Administration A Simon—p 1231
Id Problems of Administration of Medical Care Program J R Hege—p 1234
Id Hospitals and Hospital Construction G L Davis—p 1239
Id Training of Personnel and Research G St J Perrot—p 1244
Educational Implications of School Health Program C M Wheatley—p 1257
Seventy Five Years of Public Health in Massachusetts R S Patterson and Mary C Baker—p 1270
*Sponsored Epidemic of Mumps in Private School M I Levine—p 1274
Salmonella Types Isolated in Georgia in 1941-1943, Including a New Type Salmonella Georgia Janie T Morris Alice Brim and T I Sellers—p 1277
Isolation of *Shigella* Paratyphenteriae Type P288 of Boyd from Case of Acute Diarrhea Janie T Morris Alice Brim and T I Sellers—p 1279

Sponsored Epidemic of Mumps—Levine reports the results of an attempt to cause an epidemic of mumps in a private school of 161 children. Out of 114 susceptible children exposed 62 contracted the disease within a period of three months. Six of these developed complications. There were 4 cases of mumps encephalitis, 1 case of orchitis and 1 of probable mild pancreatitis. A questionnaire was sent out requesting complete information on the children who contracted the disease with an added question as to whether any other members of the family contracted the disease. The final analysis revealed that besides 1 teacher who was incapacitated with the disease for two weeks 10 parents suffered from the infection, a possibility which was completely overlooked when the plan was suggested. It is doubtful that any further epidemics will be sponsored by the school.

American Journal of Surgery, New York

66:287-424 (Dec) 1944

- Gas Gangrene in Amphibious Warfare in Pacific Area H B Noel and I P Cole—p 290
Carcinoma and Lymphosarcoma of Colon: Case of Lymphosarcoma of Descending Colon B T Tilton—p 300
Healing of Intestinal Anastomosis A E Spelman—p 309
*Aire-Lite: New Plastic Medium of Clinical Immobilization J Kulowski, A M French and H R Erickson—p 315
Procidencia: Chiasm Vaginal Subtotal Hysterectomy for Cure of 1 month Decree Prolepsis—Review of Technique and Results R C Chaffin—p 318
Incisions in Mammoplasty Surgery E K LaRoc—p 339
Factors in Male Sterility: Critical Review of 135 Cases J G Keshin and B D Pinck—p 346
Internal Fixation for Lumbosacral Fusion D King—p 357
Sclerotherapy of Varicose Veins: Utilization of Intravenous Air Block L J Orbach—p 362
Pitfalls to Be Avoided in Cholecystectomy M M Simon—p 367
Shift Fracture Immobilization Without Plaster H L Wenger—p 382
Refrigeration Anesthesia With Special Reference to Treatment of Severely Damaged Extremity Complicated by Visceral Injury G Mizukami—p 384
Method of Removing T Tubes from Common Bile Duct B J Ferrara—p 387

Aire-Lite: New Plastic Medium of Immobilization—Aire-Lite is a stockinet form of bandage made by loosely knitting a yarn composed of a mixture of cellulose acetate and a regenerated cellulose rayon. The knitted bandage is processed to control shrinkage, setting and drying characteristics. This processing leaves the bandage flexible and dry, in which form it is applied to the body. When the bandage is in place it is sprayed with a solvent mixture composed of a combination of volatile liquids with acetone as one of the active ingredients, which initiates setting and drying until it becomes rigid. Kulowski and his associates review observations in 136 cases in which 200 plastic casts and apparatus made with Aire-Lite were employed. The bandage must not be stretched or pulled into place because such tension will result in undue subsequent shrinkage when setting and drying have occurred. The wetted bandage should not be molded, because this will cause subsequent gelatinization and loss of porosity when the bandage has hardened. The bandage can be applied as stockinet splint or roller bandage. Users of Aire-Lite should not expect it to

replace plaster. Aire-Lite fixation in acute fractures is not wholly practicable because of the time element involved. Aire-Lite can be used effectively instead of plaster in a variety of orthopedic conditions. Aire-Lite fixation can be used also in the convalescent stages of both simple and compound fractures. Since Aire-Lite is a synthetic plastic product, atmospheric conditions may influence its behavior and interfere with uniformity of its setting and drying characteristics. One aspect of this problem is the variable tendency it has toward shrinkage and creepage, which must be anticipated and guarded against by observing a proper technique and keeping the patient under observation, especially for the first twenty-four hours after a cast has been applied. The light weight, ventilation, resistance to moisture, nonresistance to x-rays, general tidiness attending its use and acceptability to the patient gives Aire-Lite a distinct advantage over plaster.

American Journal of Tropical Medicine, Baltimore

24:331-390 (Nov) 1944

- Adaptation of Public Health Practice to Foreign Cultures Janet Welch Mackie—p 331
Blood Pressure of Cuna Indians B H Kewy—p 341
Health Status of Marshallese: Preliminary Report L S Brier and R R Allen—p 345
Consideration of Mechanism of Splenic Infarcts in Malaria R H Rigdon—p 349
Check List of Mite Vectors and Animal Reservoirs of Tsutsugamushi Disease R W Williams—p 355
Probable Role of Cat Flea *Ctenocephalides felis* in Transmission of Murine Typhus J V Irons S W Bohls, D C Thurman Jr and T McGregor—p 359
Spontaneous Histoplasmosis Occurring in Dog W P Callahan Jr—p 363
Comparative Amebicidal Activity of Phenyl Arsenic Oxide (Napharsen) Related Arsenicals and Other Agents H H Anderson and T I K Chuan—p 367
Pathologic Study of Acute Lesions Produced by *Plasmodium lophurae* in Young White Pekin Ducks R H Rigdon—p 371
Unusual Breeding Places of Mosquitoes in Vicinity of Keesler Field Mississippi F N Young Jr and W N Christopher—p 379
Cultivation of Leishmania in Yolk Sac of Developing Chick Embryo Helen Jones, G Rake and Dorothy Hamre—p 381
Improved Method for Mounting Mosquito Larvae J F Warriner—p 385

American Review of Tuberculosis, New York

50:473-586 (Dec) 1944

- Effect of Sensitivity on Distribution of Tubercle Bacilli in Tuberculosis W L Brosius and C E Woodruff—p 473
*Significance of Tubercle Bacilli in Gastric Contents D D Feld—p 481
Demonstration of Tubercle Bacilli in Employee Group with Clinically Inactive Pulmonary Tuberculosis E M Midlar and Ada Chree Reid—p 490
Closure of Tuberculous Cavities J Loesch—p 500
Bovine Tuberculosis in the United States: Its Conquest and Its Effects on Public Health H R Smith—p 520
Specific Metabolic Products of Tubercle Bacillus: Unsuccessful Search for Them in Urine of Tuberculous Patients J T Riordan—p 534
Promin Inhalation Therapy in Pulmonary Tuberculosis J S Edlin I D Dobrowitz F K Safford Jr and F S Butler—p 543
Statistical Data: What Happened to Tuberculous Death Rate? Mary Dempsey—p 556

Tubercle Bacilli in Gastric Contents—Feld states that examination of gastric contents for tubercle bacilli is practiced at the Murdale Sanatorium of all patients who state that they do not raise sputum or whose sputum is negative. It is also used when there is doubt as to the source of the sample presented. Repeated aspirations are performed on successive days, the number varying from two to six. The material used for examination consists of undiluted gastric contents aspirated from fasting patients. Only occasionally was it necessary to do a lavage. Since 1941 only cultures have been used, and guinea pig inoculation is resorted to only in special cases. Culture results are very accurate. All specimens are cultured on three slants of Petraghani's medium. In the course of a five year period a total of 4,204 gastric specimens from 868 adult patients were examined. The gastric contents of 404 of these patients were never positive, but the other 464 patients gave positive specimens. Of the 2,866 gastric examinations made on these 464 patients 1,271, or 44.3 per cent, proved positive. Cultures of concentrated sputum were made simultaneously of all patients except those without sputum. The author stresses

the importance of consecutive examinations. When five are done there is little likelihood of missing positive cases; if these examinations are negative there is not much likelihood of an active lesion. Patients who at first have only positive gastric specimens can and do develop positive sputum. The interval of repeating these examinations need not be greater than four to six months. Before patients are discharged it is necessary that they have five negative consecutive examinations.

Annals of Surgery, Philadelphia

120:817-952 (Dec.) 1944

- Wounds of Heart. D. C. Elkin.—p. 817.
 *Beneficial Effect of Intravenous Infusions in Acute Pericardial Tamponade. F. W. Cooper, E. A. Stead Jr. and J. V. Warren.—p. 822.
 *Synovial Sarcoma. C. D. Haagensen and A. P. Stout.—p. 826.
 *Synovial Sarcoma and Normal Synovial Tissue Cultivated in Vitro. M. R. Murray, A. P. Stout and I. A. Pogogeff.—p. 843.
 *Physiologic Observations on Patients with External Pancreatic Fistula. J. M. Miller and T. B. Wiper.—p. 852.
 Healing of Surface Cutaneous Wounds: Its Analogy with Healing of Superficial Burns. J. M. Converse and A. H. T. Robb-Smith.—p. 873.
 Battle Casualties in South Pacific Evacuation Hospital. W. J. Potts.—p. 886.
 Urinary Complications of Pelvic Endometriosis. J. R. Goodall.—p. 891.
 Application of Staging in Removal of Difficult Wilms Tumors. E. D. Sugarbaker.—p. 901.
 External Pin Transfixion of Fractures: Analysis of 80 Cases. I. E. Siris.—p. 911.

Synovial Sarcoma.—Haagensen and Stout made tissue culture studies in their cases. The 3 tumors from which these cultures were obtained all had striking histologic characteristics. They were composed of an inextricable admixture of mesothelial cells, which often lined slits or tubes and secreted a mucicarmophilic substance with strands of active hyperchromatic fibrosarcoma-like cells associated with reticular fibers. The relative amounts of these two cell forms varied enormously, but both of them were always present. The authors reexamined cases reported as synoviomia, synovial sarcoma or by some related term. Those that did not fulfil the aforementioned criteria were rejected. This screening yielded 95 cases, to which the authors add 9 previously unreported examples. Males preponderated in the proportion of 3 to 2. The tumor may develop at any age but is most frequently found in early adult life. Nearly half of the synovial sarcomas have been found in the region of the knee joint. The initial symptom is usually pain, which may be present for several years before the tumor is noted. In 42 fatal cases the total duration varied from five months to sixteen years, the mean total duration being 5.7 years. Only 3 patients in the group of 104 have been clinically cured for more than five years after treatment. Synovial sarcoma is slow growing. Although the disease apparently remains localized for several years, metastases eventually manifest themselves in the majority of cases. Diagnosis should be established by microscopic examination of a small fragment obtained by incisional biopsy which causes the least possible trauma. Synovial sarcoma is always composed of two sharply contrasted tissue forms, one reproducing caricatures of synovial structures, the other resembling fibrosarcoma, and the two are inextricably intermingled. The treatment should be radical. The authors recommend high amputation and possibly regional lymph node dissection. There is no proof that radiotherapy is effective.

In Vitro Culture of Synovial Sarcoma.—Murray and his associates cultivated material from 3 human synovial sarcomas in vitro and compared its characteristics with similarly treated normal synovial tissue from the knee joint of the adult rat. In general the human tumor cultures parallel those from the normal rat knee joint as regards form and behavior, though the normal cultures exhibit more diversity of form and more distinctive cell types. The normal synovial cell appears to be a specific cell type distinct from other epithelium and from the fibroblast. The synovial sarcoma appears to be a distinct type of neoplasm exhibiting certain similarities to the mesothelioma.

External Pancreatic Fistula.—Miller and Wiper report observations on 3 patients with an external pancreatic fistula. The general nutritional state of these patients was directly proportional to the severity of the fistula. The first patient had experienced severe weight loss. Gradual diminution in flow of

the fistula was accompanied by increased appetite and gradual increase in weight. By the time closure of the fistula occurred, normal weight had been restored. The patient who was losing the least amount of secretion presented the least alteration of body substance. Estimates of other investigators have placed the daily amount of pancreatic flow into the duodenum in a range varying from 500 to 1,500 cc. The patient studied by the authors secreted amounts ranging up to 1,770 cc. a day. The volume flow during the daytime was greater than at night, and postprandial secretion showed a decided increase. Severe continued loss of pancreatic fluid containing large amounts of electrolytes produces changes in the plasma electrolyte pattern. Great alteration was observed in the water balance, in the plasma protein level and in the plasma sodium. The sodium loss in severe pancreatic fistulas produces a clinical syndrome similar to that described by Addison, with the exception that in these individuals adrenal disease is not present. This analogy has not been previously stressed. The administration of adequate amounts of sodium and water in the presence of sufficient plasma protein to hold them in the circulation alleviates the symptoms peculiar to this syndrome. Diminution in pancreatic secretion through the fistula may be obtained by a number of drugs, but ephedrine and sodium bicarbonate are the most practical. Detailed physiologic observations on pancreatic function support the theory that secretin secretion is a filtration process. Sodium ion is present in equal amounts in both blood plasma and pancreatic secretion. The concentrations of chloride and bicarbonate ions are the same in blood plasma and pancreatic secretion. The same amount of ionizable calcium is present in blood plasma and pancreatic secretion. Sulfanilamide is found in the same amount in blood plasma and pancreatic secretion. This suggests the use of sulfanilamide in acute inflammatory disease of the pancreas. Pancreatic flow is greatly dependent on the state of hydration of a person. Large amounts of ionizable calcium are normally returned to the gastrointestinal tract through pancreatic secretion. This phenomenon has not received the recognition it warrants. Pancreatic secretion is stimulated by the administration of histamine intramuscularly and by the intravenous administration of isotonic solution of sodium chloride or 5 per cent glucose in isotonic solution of sodium chloride intravenously.

Archives of Dermatology and Syphilology, Chicago

50:355-460 (Dec.) 1944

- Exit Dose in Dermatologic Roentgen Therapy. G. C. Andrews, C. B. Braestrup and E. B. Heisel.—p. 355.
 Combined Bodian and Masson Staining Method Applied to Skin. W. B. Dublin.—p. 361.
 Erythema Elevatum Diutinum. L. W. Ketron.—p. 363.
 Nervus Anemicus (Voerner). F. O. Piorkowski.—p. 374.
 Postwar Graduate Training in Dermatology and Syphilology. C. G. Lane and G. M. Lewis.—p. 378.
 *American Onchocerciasis. L. Goldman.—p. 385.
 American Leishmaniasis of Frambesial Type. O. G. Costa.—p. 394.
 CIII. Kaposi's Varicelliform Eruption: Report of 5 Cases. C. W. Lane and W. C. Herold.—p. 396.
 Prosis of Kidney as Cause of Pruritus Vulvae. A. Strickler.—p. 405.

American Onchocerciasis.—Goldman thinks that the study of American onchocerciasis, which is of great importance to public health in Guatemala and Mexico, may help to understand a closely related cutaneous nematode infection which is of some military importance at the present time, filariasis caused by *Wuchereria bancrofti*. In spite of the dissimilarities in the clinical pictures of these two forms of filariasis, there are certain broad general relationships, especially as regards reactions and response to therapy. The parasite which causes onchocerciasis is *Onchocerca volvulus*, a member of the true filaria group. The mechanism of infection of American onchocerciasis is as follows: Through the bite of an infected simuliid, the microfilariae are introduced into the skin. The infective worm travels superficially in the skin until surrounded by cellular inflammatory infiltrate, when gradually it becomes embedded in fibrous connective tissue, where the adult worm develops. The adult forms of *Onchocerca volvulus* are present in subcutaneous nodules about the head and shoulders especially and the microfilariae in superficial tissues of skin and eye. The clinical triad of onchocerciasis includes onchocercoma, onchophthal-

mia and the nonspecific forms of onchodermatitis. The commonest type of dermatitis, perhaps, outside of pruritus, is the reddened, edematous face. The therapy is surgical removal of the nodules containing the adult worms. Present day methods of control are concerned with the treatment of the human carrier. According to some investigators there is a possibility of spread of onchocerciasis through carriers from infected areas of Central America coming into areas of the United States where the insect vector, the Simulium, is found. Moreover, the Pan American Highway traverses part of the onchocerciasis areas of Central America.

Archives of Neurology and Psychiatry, Chicago

52:431-570 (Dec.) 1944

- Studies on Diseases of Muscle. I. Progressive Muscular Dystrophy: Clinical Review of 40 Cases R. E. Shank, Helena Gilder and C. L. Hoagland—p. 431.
- Pathology of Demyelinating Diseases as Allergic Reaction of Brain. A. Ferraro—p. 443.
- Human Pyramidal Tract X Bahinski Sign and Destruction of Pyramidal Tract A. M. Lassek—p. 484.
- Synchronization of Spontaneous Activity in Denervated Human Muscle. A. M. Harvey and S. W. Kuffler—p. 495.
- Electric Convulsive Therapy of Psychoneuroses L. B. Kalinowsky, S. E. Barrera and W. A. Horwitz—p. 498.
- Reaction of Meninges to Blood—E. M. Hammes Jr—p. 505.
- Electroencephalographic Evaluation of Psychopathic Personality: Correlation with Age, Sex, Family History and Antecedent Illness or Injury. J. R. Knott and J. S. Gottlieb—p. 515.
- Intracranial Pressure in Human Subject at Altitude E. W. Peterson, B. S. Kent and W. V. Cone—p. 520.
- Relation of Circulus Arteriosus to Hypothalamus and Internal Capsule H. S. Rubinstein—p. 526.
- Neurologic Complications Following Use of Continuous Caudal Anesthesia. W. G. Peacher and R. C. L. Robertson—p. 531.

Intracranial Pressure in Human Subject at Altitude.—Peterson and his associates studied the effects of altitude on the intracranial pressure of a patient with a large cranial defect. The tremendous size of the defect and the fact that there was no retraction of the scar made instrumental observations possible. The defect measured approximately 16 by 10 by 2.5 cm. and was perfectly healed and freely mobile under stresses of artificially increased intracranial pressure. A decompression chamber was used throughout the experiments. Preliminary decompression was carried out with a view to familiarizing the subject with the knack of maintaining the patency of the eustachian tubes and to acquainting him with the unusual surroundings of the chamber in order to reduce emotional upset to a minimum. Measurements were made at altitudes up to 30,000 feet and under conditions both of sudden and of more prolonged anoxia. The methods included (1) direct observations on a huge cranial defect, (2) herniometric recordings with photographic check, (3) plethysmographic technic and (4) recording of the spinal fluid pressure through a lumbar puncture. There was no significant increase in the intracranial pressure in man (other than normal variations) at high altitude and under conditions either of sudden or of more prolonged anoxia. These results are regarded as of particular importance with respect to transportation of casualties and sick persons by air. Experience with other patients with head injuries indicates that these casualties tolerate air transportation well. It may be to them a life saving measure by providing rapid, definitive treatment. Any specific contraindication bearing on changes in intracranial pressure is not in accord with the experimental and practical evidence obtained from the case described.

Archives of Pathology, Chicago

38:365-444 (Dec.) 1944

- Experimental Pothomycosis in Mice. Observations on Its Genesis and on the Histologic Changes. W. Ebrich and Claire Foster—p. 365.
- Nondevelopment of Septum Transversum with Congenital Absence of Anterocentral Portion of Diaphragm and of Suspensory Ligament of Liver and Presence of Elongated Ductus Venosus and Pericardio-peritoneal Foramen. A. E. Casey and Eleanor H. Hadden—p. 370.
- Aberrant Pancreatic and Gastric Tissue in Intestinal Tract. Mary Maher Troll—p. 375.
- Experimental Studies on Therapy and Prevention of Degenerative Vascular Diseases: II. Effects of Several Detergents on Experimental Cholesterol Atheromatosis of Rabbits. W. C. Hueper—p. 381.
- Experimental Pathology and Physiology of Adrenal Cortex. Production of Addison's Disease in Laboratory Animals. J. M. Rogoff—p. 392.

Archives of Surgery, Chicago

49:301-366 (Nov.) 1944

- Genetic Aspects of Cancer Problem: Preliminary Report on Survey of Constitution as Related to Cancer. F. Blank—p. 301.
- Pilonidal Cysts. L. B. Felms, C. C. Woods and D. H. Sprong Jr.—p. 316.
- Rupture of Intestine Caused by Nonpenetrating Trauma of Abdominal Wall. Report of Cases. G. H. Hunt and J. N. Bowden—p. 321.
- Epithelialization of Experimental Wounds. F. L. Apperly and M. Katherine Cary—p. 327.
- Differences in Patterns of Bites of Venomous and of Harmless Snakes. C. H. Pope and R. M. Perkins—p. 331.
- Review of Urologic Surgery. Kidney. A. J. Scholl and others—p. 337.
- Progress in Orthopedic Surgery for 1943: XII. Conditions Involving Foot and Ankle. E. D. W. Hauser and R. P. Montgomery—p. 348.
- Id. XIII. Tuberculosis of Bones and Joints. A. D. Smith—p. 356.
- Id. XIV. Chronic Arthritis. L. T. Swann—p. 357.
- Id. XV. Fracture Deformities. E. M. Regen, R. B. Riney, G. Barber and P. Harmon—p. 362.

Arkansas Medical Society Journal, Fort Smith

41:121-144 (Nov.) 1944

- Differential Diagnosis of Glycosuria from Diabetes Mellitus. L. N. Bollmeier and A. Meyer—p. 121.
- Modern Concepts of Cardiovascular Disease: Committee on Heart, Arkansas Medical Society. C. T. Chamberlain—p. 127.

41:145-164 (Dec.) 1944

- Modern Concepts of Cardiovascular Disease. C. T. Chamberlain—p. 145.
- Carcinoma of Large Bowel. W. G. Cooper—p. 147.
- Arkansas State Blood Plasma Program. P. C. Eschweiler—p. 149.

Bull. of Johns Hopkins Hospital, Baltimore

75:253-325 (Nov.) 1944

- Interrelationships of Glomerular Filtration Rate (Mannitol Clearance), Extracellular Fluid Volume, Surface Area of Body and Plasma Concentration of Mannitol: Definition of Extracellular Fluid Clearance Determined by Following Plasma Concentration After Single Injection of Mannitol. E. V. Newman, J. Bordley III and Jane Winteritz—p. 253.
- Atypical Pneumonia: Diagnostic Problem in Tropics. P. A. Tumulty—p. 269.
- *Vitamin C Economy in Human Subject. M. Pijoan and E. L. Lozner—p. 303.
- *Note on the Minimum Requirements of Man for Vitamin C and Certain Other Vitamins. V. A. Najjar, L. E. Holt and Harriet M. Royston—p. 315.
- Effect of Intravenous Injection of Epinephrine and Angiotonin Before and After Production of Neurogenic Hypertension. Caroline B. Thomas and R. L. McLean—p. 319.

Vitamin C Economy.—Pijoan and Lozner attempted to ascertain (1) the minimal daily requirement of ascorbic acid necessary to protect against scurvy and (2) the period of protection afforded by saturation with the vitamin. The only known anatomic lesion of vitamin C deficiency is the scorbutic process, and the evaluation of ascorbic acid deficiency from an assay of the diet is untrustworthy. Not until a diet can be demonstrated to produce a steady linear decline in the vitamin C content of the white cell-platelet layer (or some index derived from whole blood) or to produce scurvy can one call it deficient. One subject was put on a vitamin C free regimen until there was a steady linear decline of the blood white cell-platelet values. He was then given at protracted intervals small amounts of vitamin until such time as the blood tissue white cell-platelet values remained constant (25 to 26 mg. per hundred grams). At the end of twenty-one months on the constantly maintained low values there were no scorbutic manifestations. An experimental wound produced in the twenty-first month was followed by adequate collagen and reticulum formation with normal tissue healing as noted on biopsy. Six subjects were saturated with ascorbic acid (400 to 500 mg. daily for four to six days) and then placed on a diet lacking in vitamin C but normal in all other respects. None of the subjects developed scurvy until five to six months had elapsed and they seemed normal in every respect until two weeks prior to the onset of the disease. Gingivitis appeared in only 1 case following the advent of perifollicular hemorrhages.

Requirements for Vitamin C and Other Vitamins.—Najjar and his associates gave to a group of 7 young adults for a period of eighteen months a diet in which all water soluble vitamins were provided as pure principles in carefully measured quantities. With the exception of thiamine, the intake of which was gradually reduced until deficiency symptoms

appeared, the vitamins were given in quantities which did not vary throughout the entire experimental period. No symptoms of any deficiency other than that of thiamine were observed. Of particular interest are the observations on ascorbic acid, which confirm those of Pijoan and Lozner that scurvy does not develop on a daily intake of from 18 to 25 mg. of ascorbic acid.

Delaware State Medical Journal, Wilmington

16:185-196 (Dec.) 1944

Remarks on Bright's Disease. W. P. Belk.—p 185

Endocrinology, Springfield, Ill.

35:409-530 (Dec.) 1944

Observations on Histochemical Reactions in Human Placenta, with Special Reference to Significance of Lipoids, Glycogen and Iron. E. W. Dempsey and G. W. Wislocki.—p 409.

Comparative Bioassay of Several Extracts of Adrenal Cortex in Tests Employing Four Separate Physiologic Responses. R. E. Olson, F. A. Jacobs, D. Richert, S. A. Thayer, L. J. Kopp and N. J. Wade.—p 430

Growth of Anterior Lobe of Pituitary and Testes in Cockerel. W. R. Breneman.—p 456

Glycogenic Activity of Certain Crystalline Steroids of Adrenal Cortex when Administered Singly and with Cortical Extract to Fasted, Normal and Adrenalectomized Rats. R. E. Olson, S. A. Thayer and L. J. Kopp.—p 464

Further Observations on Induced Ovulation in Mice. Refractory Period in Early Pregnancy. H. O. Burdick and V. Ciampi.—p 473

Hepatic Lesions and Experimental Hyperthyroidism. A. A. Dill and J. D. Gunn.—p 477.

Effect of Diethylstilbestrol on In Vitro Formation of Phospholipids in Liver as Measured with Radioactive Phosphorus. A. Taurag, T. W. Lorenz, C. Eutenman and I. L. Chaikoff.—p 483

Effect of Thyroxin on Response of Thyroid Gland to Thyrotropic Hormone. Ruth Cortell and R. W. Ranson.—p 488

Functional and Morphologic Alterations of Reproductive System of Female Rat Following Prepubertal Treatment with Estrogens. H. B. Hale.—p 499

Evidence Suggesting Role of Lactogenic Hormone in Estrous Cycle of Albino Rat. J. W. Everett.—p 507.

Gastroenterology, Baltimore

3:337-434 (Nov.) 1944

Criteria of Incipient Vitamin Deficiency. A. J. Carlson.—p 337

*Relationship Between Clinical Picture of Mild or Early Vitamin Deficiency and Laboratory Determinations of Vitamin Levels. J. M. Ruffin, D. Cayer and W. A. Perlzweig.—p 340

Summary of Problem of Incipient Vitamin Deficiency. D. L. Wilbur.—p 357.

Disease of Stomach: Review of Current Literature. J. G. Mateer, J. I. Baltz, P. D. Comanduras, H. H. Steele and S. Brouner.—p 360

Total Gastrectomy: Clinical and Physiopathologic Study. F. Milanes, T. Vega, E. Morales, A. Rodriguez and A. Rodriguez Diaz.—p 380

Small Intestine: Review of Current Literature. E. D. Kiefer.—p 388.

Irritable Bowel Syndrome. G. A. Peters and J. A. Bergen.—p 399

Some Characteristics of Mucous Secretion in Digestive Tract. F. Holander.—p 403

Some Observations on Gastric Secretion in Normal Rats. S. A. Komarov, H. Shay, M. Rayport and S. S. Fels.—p 406

Early Vitamin Deficiency.—In the experience of Ruffin and his associates glossitis, papillary atrophy of the tongue, cheilosis and peripheral neuritis are the earliest and most reliable evidence of a B complex deficiency. All patients selected for study gave a history of an inadequate diet and had one or more of such indefinite symptoms as weakness, nervousness, anorexia, irritability or vague digestive complaints. All these patients had been ambulatory and, for the most part, carrying on their usual duties. None of them had any organic disease. There were 26 patients who were classified clinically as having a vitamin deficiency. The following studies were conducted: history, evaluation of the diet, physical examination with a neurologic consultation, blood count, total proteins, urinalysis, gastric analysis, proctoscopy and gastroscopy, ileal studies, stool fat, prothrombin time, slit lamp examination of the eyes, glucose tolerance test and determinations of vitamins A and C, carotene, nicotinic acid, riboflavin, thiamine, pyridoxine and pantothenic acid. None of the patients were found to have clinical evidence of a vitamin A deficiency; that is, there were no eye changes, night blindness or follicular keratosis. Ten patients in the deficiency group had vitamin A levels below the suggested lower limit of normal, and 7 patients had carotene levels which fell below this lower limit. Although pyorrhea was seen frequently, spongy bleeding gums, characteristic of scurvy, were not observed. There were no petechiae and the tourniquet test was negative. There were 7 patients in the deficiency group whose

blood level was below the suggested lower limit of normal, 5 of whom had no measurable vitamin C in the plasma. All patients classified as having a vitamin deficiency had clinical evidence of a B complex deficiency with one or more of the following physical findings: glossitis, papillary atrophy, cheilosis or peripheral neuritis. A comparison of the vitamin levels of the B complex in those with signs of deficiency and in the normal controls revealed striking differences between the two groups in the urinary excretion levels of nicotinic acid, riboflavin and thiamine. The greatest variations were found in the nicotinic acid levels. The levels for pyridoxine showed no significant variation between the normal controls and the vitamin deficiency group. This suggests that in deficiencies of the B complex a pyridoxine deficiency is not likely to occur.

Georgia Medical Association Journal, Atlanta

33:355-400 (Dec.) 1944

Surgery of Spleen. L. W. Grove.—p 355.

Modern Treatment of Empyema. T. C. Davison.—p 360.

Illinois Medical Journal, Chicago

86:237-292 (Nov.) 1944

Recognition and Management of Surgical Lesions of Sigmoid and Pelvic Colon. J. A. Wolfer.—p 249

Practical Points in Recognition and Management of Coronary Disease. O. P. J. Falk.—p 255.

Vitamin Requirements in Infants and Children. J. R. Vonachen.—p 260

Recognition of Atypical Pneumonia. T. B. Lusk and E. K. Lewis.—p 261

Results of Surgical Treatment of Acute Congestive Glaucoma. P. C. Kronfeld and H. Isabelle McGarry.—p 269.

Chronic Brucellosis, Public Health Problem. L. Lehr.—p 272

86:293-334 (Dec.) 1944

Outlet Contraction, with Especial Emphasis on Typical Funnel Pelvis. R. F. Campbell.—p 302.

Nasal Medication. N. D. Fabricant.—p 310

Mesenteric Thrombosis with Postoperative Administration of Dextran. P. F. Fox.—p 314

Falciparum Malaria. V. D. Thomas.—p 316

Phenobarbital Poisoning. Case. W. D. McNally and M. Horwitz.—p 317

Gunshot Wound Involving Upper Abdomen and Left Kidney. J. J. O'Connor.—p 318

Iowa State Medical Society Journal, Des Moines

34:487-532 (Dec.) 1944

Anesthesia for the Woman About to Deliver. Edith E. Thompson.—p 487

Pathogenesis of Congestive Heart Failure. B. F. Wolterton.—p 490

Dermatitis Medicamentosa from Intravaginal Use of Iodoquin. L. E. Gaul.—p 493.

Journal of Lab. and Clinical Medicine, St. Louis

29:1211-1324 (Dec.) 1944

Studies in Human Inheritance: XXV. Is Homozygous Form of Multiple Telangiectasia Lethal? L. H. Snyder and C. A. Doan.—p 1211

Sympatholytic Treatment of Experimental Hypertension. J. Jacobs and F. T. Yonkman.—p 1217.

Toxicity of Yohimbine Hydrochloride. F. T. Yonkman.—p 1222

*Nutritional Macrocytic Anemia in Patients with Pellagra or Deficiency of Vitamin B Complex. C. V. Moore, R. Vilter, V. Minnich and T. D. Spies.—p 1226

Propylene Glycol as Menstruum for Administration of Steroid Hormones. T. H. McGavack and Mildred Vogel.—p 1236

Practical Method for Determination of Blood Volume with Dye. T. H. M. I. Gregersen.—p 1266

Macrocytic Anemia in Pellagra.—Moore and his associates investigated 56 patients with macrocytic anemia observed in the Nutrition Clinic of the Hillman Hospital. These patients had existed for years on diets inadequate in animal protein and in the vitamins of the B complex. Most of the subjects had clinical evidence of pellagra, ariboflavinosis or beriberi. In 25 the red blood cell count ranged from 1 to 3 million cells. Males predominated in a ratio of 3 to 1, and most of the patients were older than 50 years of age. Clinical manifestations were weakness, pallor, glossitis and intermittent or persistent diarrhea. The skin either showed the presence of pellagrous dermatitis or was rough, hyperpigmented and dry. The peripheral blood and bone marrow were cytologically indistinguishable from those of Addisonian pernicious anemia. Free hydrochloric acid was found in the gastric contents of 16 patients at the time they were first studied; in 5 others, free acid was found on subsequent examination. All of the subjects showed (1) pro-

therapeutic response to the parental injection of highly purified liver extracts and (2) reticulocyte rises when fed beef muscle, and 80 per cent alcoholic extract of beef muscle or crude liver extract. When the oral administration was prolonged, the red blood cells also increased in number. The anemia is probably caused by a dietary deficiency of extrinsic factor associated in many, but not all, instances with poor absorption from the intestinal tract. Inadequate production of intrinsic factor is probably also a contributing influence. Thiamine, niacin, riboflavin, calcium pantothenate, pyridoxine, inositol, para-aminobenzoic acid and choline given together both orally and parenterally did not affect the erythropoietic equilibrium.

Journal-Lancet, Minneapolis

64:395-424 (Dec.) 1944

- Urinary Infections in Childhood. H. F. Helmholz.—p. 395.
External Steinmann Pin Fixation of Intertrochanteric Fractures. R. E. Jernstrom.—p. 398.
Symptom of Headache. L. R. Boies.—p. 400.
Usefulness of Various Anesthetic Agents in General Practice. J. S. Lundy, R. C. Adams and T. H. Seldon.—p. 405.
Congestive Heart Failure. D. L. Kegaries.—p. 407.
Cold Pressor Test. R. L. Todd.—p. 410.
Clinical Studies of Influenza Epidemic. E. L. Shrader.—p. 413.
Recent Advances in Isolation and Identification of Influenza Virus. R. O. Muether.—p. 418.
Relief of Hypertension by Mechanotherapy. S. Quisling.—p. 420.

Clinical Studies of Influenza Epidemic.—Shrader presents the clinical characteristics of an outbreak of an acute febrile disease with generalized symptoms which occurred and spread with explosive rapidity among the 508 members of two companies of the A. S. T. Unit at St. Louis University in November 1943. Members of Companies A and B had returned from furloughs by the night of November 7. On the morning of November 9 a man from Company B reported to sick call with the clinical picture of what in the previous weeks had been diagnosed as influenza. On the morning of November 10 a man from Company A reported to sick call with a similar clinical picture. On November 12, 32 men with this disease reported to the student health service throughout the day; 25 of the 32 cases were from Company A. With the hope that the spread of the disease might be restricted, Company A was quarantined on the night of November 12. On November 13 there were only 6 new cases, but on November 14 there were 36 new cases (14 in A and 22 in B). This rapid spread in both companies suggested a disease of very short incubation period. The author believes that the disease was spread primarily by class groups and secondarily through building associations and contacts. The disease was highly infectious, with an incidence of as high as 49.1 per cent in one class group and 44.4 per cent in one building. Infectiousness persisted in the postfebrile period for about three days. The incubation period was probably between twenty-four and forty-eight hours. The disease had a four day febrile course without local signs, local symptoms or complications. Because of the short incubation period, the high degree of infectiousness, the freedom from symptoms during the early invasion period and the presence of subclinical cases, the most effective method of control seemed to be case finding inspections twice daily. These inspections consisted of taking temperatures, observing the men and questioning them as to their well being. All men with fever or those who felt ill were either hospitalized or isolated for further observation. The case finding inspections were continued from November 15 to November 22, during which time all activities in both companies were suspended and the men were restricted to their building areas. The duration of the disease and the degree of illness were effectively lessened by early discovery and prompt rest. No other form of treatment seemed to have any effect.

Journal of Thoracic Surgery, St. Louis

13:445-532 (Dec.) 1944

- Etiology of Cerebral Abscess as Complication of Thoracic Disease. J. L. Collis.—p. 445.
Hydatid Cysts of Lung. L. R. Davidson.—p. 471.
Surgical Ligation of Patent Ductus Arteriosus Associated with Aneurysm of Pulmonary Artery: Report of Successful Case. J. W. Nixon.—p. 513.
Trans thoracic Gastric Surgery, with Report of Transthoracic Resection of Diverticulum of Stomach. D. L. Paulson.—p. 518.

Michigan State Medical Society Journal, Lansing

43:937-1032 (Nov.) 1944

- What People of Michigan Think of Medicine. J. F. Hunt.—p. 981.
Primary Atypical Pneumonia. A. A. Applebaum and C. E. Hufford.—p. 989.
What Modern Army Health Service Should Be. J. C. Meakins.—p. 979.

43:1033-1134 (Dec.) 1944

- Neuropsychiatry and General Practitioner. W. C. Menninger.—p. 1069.
Gastroscope as Aid to Diagnosis. A. R. Hufford.—p. 1076.
Surgical Treatment of Gallbladder Disease. M. M. Zininger.—p. 1082.

Military Surgeon, Washington, D. C.

95:441-536 (Dec.) 1944. Partial Index

- Experience of Medical Division of U. S. Naval Base Hospital No. — for Its First Year of Operation. S. A. Overstreet and H. B. Yeatts.—p. 441.
*Peptic Ulcer and Nutrition. G. Cheney.—p. 446.
Pilonidal Sinus: Indications for Treatment in Military Service in Time of War. H. Rogers.—p. 454.
Meningococcemia: Report of 5 Sporadic Cases. J. M. Hayman Jr.—p. 457.
Peritonsillar Abscess: Plan for Conservative Treatment. A. B. Berkove.—p. 462.
Management of Ankle Fractures and Fractures of Long Tibial and Fibular Shafts at Station Hospitals and in Battle Casualty Stations. N. J. Giannestras.—p. 474.
Psychiatric Aspects of Gastrointestinal Complaints of Soldier in Training. L. Pulsifer.—p. 481.
Bismuth Stomatitis During Treatment of Syphilis in Army. S. S. Silverman.—p. 486.
Psychologic Testing Program in Army Station Hospital. E. D. Greenwood, H. L. Snider and M. M. Seneti.—p. 489.
Portable Plaster Spica and Thomas Splint Traction for Treatment of Fractured Femur. C. C. Johnston.—p. 495.
Dermatophytids: Allergic Manifestation. S. S. Rubin.—p. 497.
Use of Procaine Hydrochloride with Intramuscular Administration of Penicillin Sodium. W. F. Shannon and E. L. Zielinski.—p. 501.
Sulfosalicylic Acid Blood Filtrate and Determination of Sulfathiazole and Sulfanilamide and Sulfadiazine. F. S. Schlenker.—p. 503.
Shoe Dermatitis Among Soldiers.—p. 505.
*Problem of Diagnosis and Treatment of Early Hepatic Cirrhosis. J. W. Johnson.—p. 507.
Cold Agglutinins in Respiratory Disease. A. M. Freedman and I. A. Mirsky.—p. 512.
Newer Concepts of Surgical Treatment of Varicocele. M. O. Zucker.—p. 515.

Peptic Ulcer and Nutrition.—Considerable evidence has accumulated that a dietary deficiency may play a part in the development of peptic ulcer. Cheney states that in many patients symptoms first appeared after being on canned rations, which included little or no fresh food for weeks or months. Meulen-gracht's dietary management makes use of the principle that a full diet will improve the patient more rapidly than a restricted one. In the production of experimental peptic ulcer in dogs it has been shown that the lesion is less readily produced if the dog is on a full diet than when the animal is on a restricted diet. In experiments with chicks it was found that dietary deficiency and cinchophen produced gastric ulcers which could be prevented or ameliorated by feeding a diet which contained an antigizzard erosion or antiulcer factor which has been designated as vitamin U. The effectiveness of a high caloric diet rich in this antiulcer factor was investigated in the management of a group of patients with peptic ulcer which had been recalcitrant to treatment. The dietary regimen was based on the usual convalescent ulcer diet with the addition of certain food substances known to contain the antiulcer factor. The diet included six eggs daily, two soft boiled for breakfast and four uncooked in eggnog between meals. Fifty Gm. of butter, 30 Gm. of peanut butter, 30 cc. of olive oil and certain fresh greens also were included. The patients also received one helping of tender meat and orange juice and tomato juice daily. The liberal diet made no patient worse, and the omission of the drugs did not aggravate the patients' symptoms. Two thirds of the patients were completely relieved, and 27 of the 31 patients were clearly benefited. The patients represent a small number of cases of therapeutic failures encountered in a large series of ulcer patients treated by the usual medical management, and consequently the successful results must be considered exceptional. This group of 31 patients represents but 7.4 per cent of the 418 ulcer cases observed, and it is just this group

which has so frequently been operated on in the past. It is recognized that defective nutrition is but one factor of several which may lead to the precipitation of symptoms of peptic ulcer, but it would seem that it might be an important one.

Early Hepatic Cirrhosis.—Johnson says that a relative increase in globulin may be expected in the majority of patients with early cirrhosis of the liver. Other diseases which exhibit alteration in the serum proteins must be considered in the differential diagnosis. He reports 5 cases with definite evidence of increase in globulin, symptoms of liver dysfunction and decreased hippuric acid excretion. These cases are probably illustrative of early hepatic cirrhosis, in which stage adequate treatment is most effective. A high carbohydrate, high protein and low fat diet with extra vitamins has caused great symptomatic improvement.

North Carolina Medical Journal, Winston-Salem

5:577-636 (Dec.) 1944

- Our Debt to the Aging. W. S. Bainbridge.—p. 577.
Art of Geriatric Practice. M. W. Thewlis.—p. 580.
The Aging Person: Psychologic and Psychopathologic Aspects of Aging. O. Diethelm.—p. 583.
Functional Personality Disorders in the Aging. E. B. Allen.—p. 585.
Occurrence and Treatment of Delirious Reactions in the Aging. E. J. Doty.—p. 591.
Pancreatitis in Older Patients. W. M. Johnson and O. T. Davis.—p. 595.
Prevention of Anesthetic Complications. D. L. Burdick.—p. 600.
Senile Patients in State Hospital at Morgantown. L. G. Beall.—p. 603.

Public Health Reports, Washington, D. C.

59:1575-1602 (Dec. 8) 1944

- *Fluoride Domestic Waters and Systemic Effects: II. Fluorine Content of Urine in Relation to Fluorine in Drinking Water. F. J. McClure and C. A. Kinser.—p. 1575.

Fluorine Content of Urine in Relation to Fluorine in Drinking Water.—McClure and Kinser found that where domestic waters are free of fluorine the fluorine present in urine averages 0.3 to 0.5 part per million. An increase of fluorine in the urine was associated with the use of domestic waters containing as little as 0.5 part of fluorine per million. Fluorine in urine specimens continues strikingly proportional to the fluorine content of the drinking water through the range of 0.5 to 5.1 parts of fluorine per million in the domestic water. The results furnish additional evidence of the importance of water borne fluorine as a source of fluorine in human diets. The data agree with previous epidemiologic studies which have demonstrated a striking relation between fluorine in communal water supplies and dental health, including reduced incidence of dental caries in 12 to 14 year old children. The close correlation between fluorine in drinking water and the fluorine content of urine suggests that the presumed hazard of cumulative toxic borne fluorosis surrounding certain water borne sources of fluorine in the United States is greatly reduced by this relationship. An efficient urinary elimination of fluorine appears to be characteristic of persons residing in certain fluoride areas of the United States where the drinking water contains 0.5 to 5.0 parts of fluorine per million. The metabolism of fluorine under these conditions seems to be a normal function of the human body and seems characterized by a condition approaching metabolic equilibrium, at least in the adult organism.

Texas State Journal of Medicine, Fort Worth

40:355-402 (Nov.) 1944

- Tumors of Blood Vessels. A. P. Stout.—p. 362.
Tumor Seminar. A. P. Stout.—p. 366.

40:403-458 (Dec.) 1944

- Tropical Diseases in Texas in Postwar Era. J. A. Greene and W. M. Fischer.—p. 408.
Report of 1943 Outbreak of Poliomyelitis. S. W. Bohls and J. V. Irons.—p. 412.
Nephrosis: Its Management with Plasma. C. B. Shuey.—p. 417.
Calcium and Phosphorus Metabolism as It Relates to Clinical Pediatrics. R. G. Daggs.—p. 420.
Surgery of Intracranial Aneurysms. J. Greenwood.—p. 423.
Report of Case of Teratoma of Liver in Infant. S. M. Yarbrough.—p. 426.
Tuberculosis Among Medical School Personnel. W. S. Wallace.—p. 428.
Rubeosis Iridis Diabetica. R. S. Scobee.—p. 432.
Proposed Tuberculosis Plan for Texas. G. W. Cox.—p. 436.
Less Sickness Risk for Texans. C. D. Leake.—p. 438.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

52:491-534 (Dec.) 1944

- Gonadotropins and Antihormone Problem. J. H. Leatham and A. R. Abarbanel.—p. 491.
Recent Advances in Treatment of Peripheral Vascular Diseases. G. E. Jones.—p. 494.
New Treatment for Microcystic Ovaries by Use of Diethylstilbestrol. K. J. Karnaay.—p. 507.
Osteomyelitis of Sacrum Complicated by Pregnancy. S. P. Staberg.—p. 517.
*Prevention and Treatment of Postpartum Fissured Nipples with Local Applications of Vitamin A and D Ointment. J. C. Brougher.—p. 520.

Treatment of Fissured Nipples with Vitamin A and D Ointment.—During two years of study, a group of 100 postpartum patients who complained of pain and tenderness of the nipples, with or without grossly demonstrable fissures, were treated with local dressings of vitamin A and D ointment; second group of 200 postpartum women had regular prophylactic dressings of vitamin A and D ointment applied to the nipple immediately after delivery and throughout the puerperal period; a third group of 200 postpartum patients had routine prophylactic care of the nipples with local measures other than vitamin A and D ointment. It was found that the use of vitamin A and D ointment in the local care of the puerperal nipple gave protective and therapeutic results much better than those obtained by other methods.

Yale Journal of Biology and Medicine, New Haven

17:351-426 (Dec.) 1944

- *Neostigmine in Acute Anterior Poliomyelitis. M. S. Eveleth and A. J. Ryan.—p. 351.
Synergic Activity of Staphylococcus Toxin. Harriet C. Marsh.—p. 359.
Inactive Cell Base and Measurement of Changes in Cell Water. J. R. Elkinton, A. W. Winkler and T. S. Danowski.—p. 383.
Case of Hermaphroditism in the Mouse. Elizabeth Fekete and Louise B. Neuman.—p. 395.
Union and Separation of Living Tissues as Influenced by Cellular Differentiation. H. Burrows.—p. 397.

Neostigmine in Acute Anterior Poliomyelitis.—Eveleth and Ryan report 200 cases of acute poliomyelitis in the New Haven Hospital from June through November 1943. They felt justified in trying neostigmine. The Kenny method was used in the treatment of all patients. Twelve patients in the early stages of the disease received neostigmine as an additional form of therapy. The 12 patients all showed severe spasm of the back muscles and hamstrings, and 10 of these had some paralysis in the legs. The average period from the onset of symptoms until neostigmine was given was eighteen days, and the patients averaged two weeks of the Kenny treatment during this period. The procedure was as follows: 1. The range of passive motion of the involved extremity was measured by means of the goniometer. 2. A subcutaneous injection of neostigmine methylsulfate was given. 3. The range of motion was again measured after one hour. 4. Routine Kenny treatment was then resumed. 5. Neostigmine was given orally three times a day for twenty-eight days. 6. The range of passive motion was measured for the third time. The doses of neostigmine and of atropine given were approximately the same as those used by Kabat and Knapp. There was a definite relief of muscle spasm, as indicated by an increased range of passive motion, in the lower extremities following the initial subcutaneous injection of neostigmine methylsulfate. This decrease in spasm occurred in all 12 patients and was recorded one hour after the injection. During this hour no packs were used. The difficulty in determining the effect of the oral administration of neostigmine on muscle spasm after the four week period is obvious. These patients might have had a decrease in muscle spasm without any therapy during this period, or the hot packs may have relieved the spasm. After a period of four weeks of neostigmine given orally there was, in general, little further decrease in spasm. Six of the 12 cases showed less spasm. The authors were not able to note the effect of neostigmine in contractures because their patients were all in the early stage of the disease. A period of about eight months has elapsed since this study was made and these patients have continued to receive the Kenny treatment without neostigmine. They have shown a gradual relief of muscle spasm and in most cases an improvement in muscle power. Whether or not this relief was facilitated by neostigmine is difficult to determine.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Rheumatic Diseases, London

4:1-28 (Sept.) 1944

- "New Era" in Rheumatism Treatment. L. Horder.—p. 1
Nodules and Lymph Gland Enlargement in Rheumatoid Arthritis. Also Syndrome of Rheumatoid Arthritis Combined with Multiple Xanthomatous Connective Tissue Infiltration. F. P. Weber.—p. 3
Observations on Natural History of Acute Rheumatic Fever. W. S. C. Copeman.—p. 11
Aspects of "Fibrositis." F. A. Elliott.—p. 22
Case of Tuberculous Rheumatism (Grocco Poncet Type). E. Montuschi.—p. 26

Fibrositis.—Elliott shows that the conception of fibrositis introduced in its present form by Sir William Gowers in 1904 provided so ready an explanation for a number of otherwise knotty problems that it was and is widely accepted as a disease, although it has never been placed on a satisfactory pathologic basis. The skepticism born of this pathologic ambiguity is increased by the circumstances that many conditions formerly viewed as typical examples of fibrositis are now known to have other cause. Many cases of lumbago, sciatica and "brachial neuritis" are due to prolapse of the nucleus pulposus. Other cases of lumbago are examples of spondylolisthesis or the reverse condition of posterior displacement of the fifth lumbar vertebra. Nevertheless the aforementioned conditions are still frequently treated as fibrositis. From a review of personal mistakes of this type it appeared to the author that among the factors which contribute to this confusion the most common is the misinterpretation of tenderness as a physical sign. He shows that, apart from a hypothetical inflammatory origin, muscle tenderness may have two explanations. The first is the traditional one—a central lowering of threshold to sensory stimuli. The second is the effect of localized involuntary spasm arising reflexly from lesions elsewhere. This spasm is accompanied by an increased irritability and occurs in extensor muscles which are anatomically or physiologically related to the site of disease. Thus a prolapsed disk in the lumbar spine may give rise to spasm in the lumbar muscles and it may also cause spasm of muscle fibers in the buttock and calf by irritating the fifth lumbar root. Such spasm contributes pain to the patient's discomfort, and this may be relieved by measures taken to reduce the spasm. Such treatment is valuable, but the elimination of pain by local injections of procaine does not necessarily exclude a central lesion of the nerve roots or spinal column. This thesis does not seek to shut the door on fibrositis as a clinical entity. It would be unfortunate if the hypothesis of myofascial inflammation was to be replaced at this stage by a facile generalization that muscle tenderness is always due to spasm of skeletal muscle.

British Journal of Ophthalmology, London

28:533-592 (Nov.) 1944

- Unilateral and Bilateral Retinoblastoma. Possible Histologic Difference. J. N. Cummings and A. Sorsby.—p. 533
Observations on Transparency of Conjunctiva. P. A. Gardiner.—p. 538
Photographs of Retinal Detachment in Aphakia Before and After Operation. E. Rosen.—p. 554
Studies in Dark Adaptation as Means of Detecting Deficiency of Vitamin A. G. W. Robertson and J. Yudkin.—p. 556
Snake Venom Ophthalmia. H. Ridley.—p. 568
Plastic Spheres for Implantation into Tenon's Capsules in Frost-Lang Type Operation for Enucleation of Eyeball. R. E. Wright.—p. 573
Local Application of Penicillin Solution to Eye. R. E. Wright.—p. 574
End Results of Operation for Detachment of Retina, with Follow Up of 50 Successful Cases. M. L. Hime.—p. 575

Snake Venom Ophthalmia.—According to Ridley, *Naja nigricollis*, the black necked cobra, is the common spitting snake, though other African cobras have to a less extent the power to eject venom. All these snakes are exceedingly poisonous. The author reports that a laborer aged 30, while cutting grass with a native scythe, discovered a snake. The reptile spat venom, some of which entered the right eye. About twenty minutes after the injury the man walked into the ophthalmic department of a hospital, accompanied by one of his colleagues carrying the decapitated snake, which was identified as a black necked cobra. The patient complained of considerable pain in the right eye. There was a moderate degree of conjunctival

injection. The whole corneal epithelium was edematous. On the second day there was chemosis with a profuse mucoid discharge accompanied by edema of the lids. The lower half of the cornea was bare of epithelium, but sensation was absent. By the fifth day the cornea was completely covered by edematous, very loosely attached epithelium. Sensation was present, though much diminished. On the ninth day corneal sensation was normal but the bulla remained. On the fourteenth day the epithelium was normal and apart from the localized faint corneal opacity the eye had completely recovered. The interesting features of this case appear to be the prolonged corneal anesthesia, persisting for five to seven days, and the abnormal epithelial regeneration resembling the epitheliolysis of neuro-paralytic keratitis or recurrent erosion. Cobra venom has been used as an analgesic, but little work has been done on the employment of venom in ophthalmology. The author suggests that a harmless substance capable of producing prolonged anesthesia of the anterior segment of the eye would be of considerable value in inflammatory conditions and after operations or other forms of trauma, and the styptic effect of viper venom might also have its uses.

British Journal of Surgery, Bristol

32:109-224 (July) 1944. Supplement

- Army Progress with Penicillin. L. T. Poole.—p. 110.
Principles of Penicillin Treatment. H. W. Florey and M. A. Jennings.—p. 112
Bacteriologic Methods in Connection with Penicillin Treatment. L. P. Garrod and N. G. Heatley.—p. 117.
Application of Penicillin to War Wounds. J. S. Jeffery.—p. 124
Bacteriologic Examination of Wounds Treated with Penicillin. S. Thomson.—p. 129.
Treatment of Flesh Wounds by Early Secondary Suture and Penicillin. F. H. Bentley.—p. 132
Early Closure of Soft Tissue Wounds with Chemotherapeutic Agents. Comparative Study of Sulfanilamide and Penicillin. J. J. M. Brown.—p. 140.
Battle Casualty Fractures in Italy. Treatment with Penicillin. J. S. Jeffery.—p. 144
Use of Penicillin to Control Infection in Open Fractures of Femur. Interim Report. R. Furlong and J. M. P. Clark.—p. 147
Battle Casualty Fractures of Femur. Treatment with Penicillin. R. J. B. McEwan and J. G. Bickerton.—p. 154.
Gas Gangrene in Italy. Study of 33 Cases Treated with Penicillin. J. S. Jeffery and S. Thomson.—p. 159.
Treatment of Clostridial Infections with Penicillin. E. C. Cutler and W. R. Sandusky.—p. 168
Intrapleural Penicillin in Penetrating Wounds of Chest. W. T. Nicholson and C. R. Stevenson.—p. 176.
Penicillin in Treatment of War Wounds of Chest. A. L. D'Abreu, J. W. Litchfield and S. Thomson.—p. 179
Penicillin in Head and Spinal Wounds. H. Cairns.—p. 199.
Observations on the Prophylactic Use of Penicillin in Wounds of Aerial Warfare. E. C. Cutler, P. C. Morton and W. R. Sandusky.—p. 207.
Penicillin Therapy in Gonorrhea. 1,000 Cases of Sulfonamide Resistant Gonorrhea and 100 Cases of Acute Gonorrhea Previously Untreated. J. N. Robinson.—p. 211.
Penicillin Therapy for Syphilis. C. R. Wise and D. M. Pillsbury.—p. 214

Lancet, London

2:553-584 (Oct. 28) 1944

- Sulfonamide Dermatitis: Further Observations, with Special Reference to Treatment and Prevention. B. C. Tate and I. Klorfajn.—p. 553.
Dysentery in British Prisoners of War. H. Bloom.—p. 558
Tatty Diarrhea in Chronic and Relapsing Dysentery. H. T. Howat.—p. 560
Surgery of Varicose Veins. H. R. Arthur.—p. 561.
Pulsator Treatment of Crush Injury. D. V. Marshall.—p. 562
Sims Test. Mary Barton and B. P. Wiesner.—p. 563
Quinine Blindness. I. S. McGregor and A. Loewenstein.—p. 566

Pulsator Treatment of Crush Injury.—Marshall reports 4 cases of crush injury in which unexpectedly good results were obtained with a respirator. As soon as possible after the diagnosis of crush injury had been made, the damaged limb or limbs were placed in the respirator and the pulsation mechanism was worked at the slowest rate for about half an hour. Four patients received treatment for this period every two or three hours in rotation. It was continued regularly, except during sleep, until the circulation of the affected parts seemed restored, as judged by the diminution of pain, return of warmth and color and loss of tension. They all recovered. The author concludes that the fatal result of crush injury may be prevented by prompt restoration of the circulation in the affected part by the use of a mechanical pulsator.

Quinine Blindness.—A man aged 37, who had developed malaria twelve years before in India and who often had had quinine without toxic effects except tinnitus and transient deafness, in a recent attack was given about twelve doses of 30 grains (2 Gm.) of quinine dihydrochloride in one day. He is now blind. McGregor and Locwenstein say that, if such unfortunate results are to be avoided, the view that quinine blindness is benign must be modified. The authors present evidence of damage to the retinal cells by quinine with the production of a scotomatous or "sievelike" field. The milky appearance of the retina is attributed to the ischemia produced by toxic swelling of the endothelium of the small vessels. Treatment is designed to effect early and vigorous fluid exchange—locally, by paracentesis of the cornea and emptying of the anterior chamber for the first few days, at least in one eye; generally, by purgation and copious drinks, intravenous saline solution and thecal drainage. The processes of oxidation in the retina should be facilitated by a generous intake of vitamin B complex and ascorbic acid. To avoid such catastrophes as blindness, quinine dosage should be cautious and the drug should be stopped at once if visual symptoms arise.

2:585-616 (Nov. 4) 1944

- The Film in Medical Education: I. Planning C. J. Longland and R. MacKeith.—p. 585.
Id II Production and Scope. B. Stanford.—p. 588.
Carbon Tetrachloride Nephrosis J. R. Forbes and M. D. Lond.—p. 590.
Segments and Blood Vessels of Lungs. A. B. Appleton.—p. 592.
Rh Antenatal Testing: Suggested Nomenclature J. Murray.—p. 594.
Tetany After Extensive Gut Resection J. A. Cosh.—p. 596.
Survival After Removal of Twenty Feet of Intestine C. C. Holman.—p. 597.
Cellulitis Due to Hemolytic Streptococcus Type C B. Portnoy and R. Reitter.—p. 597.
Rapid Test for Serodiagnosis of Syphilis F. Rappaport and F. Eichhorn.—p. 599.

2:617-646 (Nov. 11) 1944

- Social Medicine An Academic Discipline and an Instrument of Social Policy. F. A. E. Crew.—p. 617.
*Micromethods of Estimating Penicillin in Blood Serum and Other Body Fluids. A. Fleming.—p. 620.
*Penicillin Content of Blood Serum After Various Doses of Penicillin by Various Routes. A. Fleming and M. Y. Young.—p. 621.
African Sleeping Sickness: Case. J. Grant, M. Anderson and R. B. Thompson.—p. 624.
Operation for Hydrocele. H. J. Croot.—p. 625.

Micromethod of Estimating Penicillin in Blood Serum and Other Body Fluids.—Fleming points out that there is no chemical test for penicillin in blood, but the concentration of this substance in blood serum can readily be estimated by titrating its bacteriostatic power on a suitable test organism. Since it is inadvisable to withdraw large specimens of blood when the withdrawal has to be repeated frequently, the author prefers microtitration, which has been constantly improved. The hemolytic streptococcus has been substituted for the staphylococcus as the test organism. Blood is used as the indicator, and for incubation of the test mixtures either slide cells or capillary tubes are used. The author gives detailed descriptions of the slide cell method and of the capillary tube method. Very consistent results are obtained by these methods, and when a series of observations is made at intervals following an injection of penicillin a regular curve is obtained.

Penicillin Content of Blood Serum.—Fleming and Young estimated the concentration of penicillin in the blood serum of patients who have been receiving the drug in various doses intravenously, intramuscularly or subcutaneously, either as single injections or as a continuous drip. In this way they acquired information as to the maximum height to which the penicillin content rose and as to how long an appreciable penicillin content was maintained after a dose. The curves are regular, which suggests that the method of test is reasonably accurate. These curves show that penicillin is very rapidly absorbed after intramuscular or a subcutaneous injection and that following the larger doses it can be detected in the blood for a considerably longer time than after the smaller doses. Penicillin appears in the blood within a few minutes of an intramuscular or subcutaneous injection; so from the point of view of getting the drug into the circulation quickly there is little to be gained by intravenous administration. At the same time there is little to be lost, for the rate of disappearance from the blood is not greatly

different whether the injection is given intravenously or intramuscularly. The information obtained indicates the frequency with which doses should be given to maintain a bacteriostatic concentration in the blood over the whole period of treatment.

New Zealand Medical Journal, Wellington

43:211-264 (Oct.) 1944

- Use of Thiourea and Derivatives in Treatment of Thyrotoxicosis C. E. Hercus and H. D. Purves.—p. 213.
Modern Industrial Toxicology. J. M. Davidson.—p. 218.
Penicillin in War Wounds E. Button.—p. 223.
Food Compositions. E. B. Gunson.—p. 228.
*Prognosis in Schizophrenia. K. R. Stallworthy.—p. 230.
Spontaneous Common Sensory Phenomena With and Without Organic Lesions of Brain. I. M. Allen.—p. 233.
Early Diagnosis of Pulmonary Tuberculosis: Review of Cases Retained in Recruits by Radiologic Examination E. K. MacLeod.—p. 237.
Plan for General Practitioner Medical Service J. B. Dawson.—p. 241.
Future of General Practice. D. Robb.—p. 248.

Prognosis in Schizophrenia.—Stallworthy thinks that schizophrenia is sufficiently common in general practice to make valuable some broad generalizations about its prognosis. Of 775 patients admitted to the Auckland Mental Hospital in 1939 and 1940, 196 were considered schizophrenic. The author investigated the outcome in these patients and found that in patient develops a psychosis which fits the somewhat accommodating label of schizophrenia he has a remarkable chance of recovery. Forty-two per cent of schizophrenic patients admitted to the Auckland Mental Hospital are, after four years, discharged; some of them show intellectual and emotional blunting, but many are completely well. Seven per cent of the remainder are dead—scarcely a negligible mortality. In spite of occasional dramatic responses there is no unquestionable evidence that modern assaults on the cerebrum with convulsant drugs, electricity or the surgeon's knife materially improve the long term outlook in schizophrenia. In the Auckland Mental Hospital chief reliance is placed on the minimal emotional demands of an ordered institutional existence and the extraneous stimulus of occupational therapy. In a patient with schizophrenia, neither intellectual deficiency, a tainted family history, the occurrence of previous psychotic episodes, relatively long duration of symptoms nor type of illness is necessarily incompatible with recovery. If recovery is to occur, it is not to be expected for six to nine months.

Khirurgiya, Moscow

3:3-21, 1944. Partial Index

- *Latent Anaerobic Infection in Gunshot Wounds. I. A. Chernaya.—p. 3.
Vitamin K (Methyl Naphthaquinone) in Surgery. A. V. Palladin, T. Y. Nodler and B. T. Khaykina.—p. 9.
Thrombin: Its Nature and Uses in Surgery. V. A. Kudryashov.—p. 12.
Neurohumoral Factors in Pathogenesis in Delayed Healing of Wounds. S. M. Leytes, P. M. Veger and E. T. Zlatopolskaya.—p. 17.
Ammonium Bicarbonate Treatment of Suppurating Wounds T. F. Berezn.—p. 19.

Latent Anaerobic Infection in Gunshot Wounds.—Chernaya studied the anaerobic flora cultured from 159 bone sequestrums, 92 foreign bodies removed from old gunshot wounds and tissues from 34 reamputated stumps. Anaerobic flora was found in 16 of 34 reamputations, in 32 of 92 foreign bodies and in 39 of 159 bone sequestrums. The clinical course of the investigated cases did not differ from the usual and did not give any reason to suspect the presence of anaerobic microorganisms. The lapse of time between the sustaining of the wound and the bacteriologic investigation amounted to eight to sixteen months and in some instances to as long as fourteen to sixteen months. *Clostridium welchii* was found in 51 instances and *Clostridium sporogenes* in 43, while in 7 instances no pathogenic anaerobes were demonstrated, in 5 *Clostridium butyricum* and in 2 *Clostridium tetanoides*. Other causative agents of gas infection, such as *Clostridium oedematiens*, *Clostridium septicum*, *Clostridium histolyticum* and *Clostridium tetani*, were not demonstrated in any instance. Seventy-five per cent of the strains of *C. welchii* have retained their virulence. Prolonged residence up to sixteen months of this organism in the body did not alter its cultural or pathogenic property. The author concludes that the satisfactory general state of a patient with an old gunshot wound does not exclude the possibility of a dormant latent anaerobic infection which may become activated by a new intervention.

Book Notices

Control of Pain in Childbirth: Anesthesia, Analgesia, Amnesia. By Clifford B. Lull, M.D., F.A.C.S., Clinical Professor of Obstetrics, Jefferson Medical College, Philadelphia, and Robert A. Hingson, M.D., Surgeon, U. S. Public Health Service. With an introduction by Norris W. Vaux, M.D., Obstetrician-in-Chief, Philadelphia Lying-In Unit, Pennsylvania Hospital, Philadelphia. Cloth. Price, \$7.50. Pp. 356, with 132 illustrations. Philadelphia, London & Montreal: J. B. Lippincott Company, 1944.

In this book the authors present two basic themes in the control of the pains of labor, namely the relief of pain by the encephalic approach, i. e. obliteration of pain at the site of interpretation, with general, intravenous, intramuscular and rectal forms of amnesia, analgesia and anesthesia, and by the anatomic approach through the obliteration of painful stimuli at their site of origin through various forms of regional, local and spinal anesthesia and caudal analgesia.

Because there is no single form of pain relief suited for every case, the authors have borrowed valuable information from other sources, particularly from John S. Lundy, C. O. McCormick and L. H. Maxson. In addition, special sections were prepared: on direct infiltration anesthesia in obstetrics by J. P. Greenhill, on paracetal, pudendal and infiltration anesthesia in obstetrics by B. E. Tucker and H. B. W. Benaron, on the technic of local anesthesia for cesarean section by Charles Gordon and on x-ray studies of the sacrum and sacral hiatus by P. A. Bishop.

Many subjects are covered in this book, including the anatomy of the organs of parturition, physiopharmacology of the general anesthetic, amnesic agents, paravertebral, peridural, regional, local, spinal, caudal and continuous caudal analgesia and anesthesia in obstetrics, psychology of the management of pregnancy and labor, history of pain relief in childbirth, technics for the relief of pain during labor and delivery, management of the third stage of labor, cesarean section, management of the puerperium, choice of the agent of pain relief in home obstetrics, control of pain in maternal complications and methods and drugs used in the resuscitation of the newborn.

The book is well written and contains numerous illustrations. Most of the illustrations, although borrowed from other sources, are highly instructive, particularly the unique illustrative charts prepared by D. Andrassy which graphically portray the depressive and stimulating actions of different drugs on maternal and fetal organs. At the end of each chapter is a useful bibliography. Regardless of whether or not one agrees with the authors in their enthusiasm for continuous caudal analgesia, all obstetricians and anesthetists can read this book with great benefit.

Terapéutica ginecológica. Por Carlos J. Calatroni, docente libre de clínica ginecológica (Buenos Aires), y Vicente Ruiz, profesor titular de clínica ginecológica (La Plata). Third edition. Cloth. Price, \$45 M/Arg. Pp. 1,212, with 412 illustrations. Buenos Aires: Librería y Editorial "El Ateneo," 1944.

This is a large and impressive volume. It is well printed, the style is good, it is easy to read and it is clearly and profusely illustrated. The majority of illustrations are original and many are in color. This work is the result of a lengthy association of the authors with students of clinical gynecology, both as instructors and as consultants. The aim has been to publish a book of gynecologic therapeutics dedicated especially to the general physician. For each gynecologic disease the authors have summarized its essential anatomopathologic lesions, its symptomatology and its diagnosis, thus laying a foundation for the most suitable therapy.

The volume discusses the normal menstrual cycle, anomalies of the menstrual cycle and treatment of pseudoamenorrhea, amenorrhea and dysmenorrhea, metropathia hemorrhagica, genital hemorrhage, abortion, ectopic pregnancy, genital discharges, gonorrhea, myoma, ovarian tumors, endocrine and nonendocrine ovarian insufficiency, genital hypoplasia, genital tuberculosis, pelvic sepsis, hydatidiform mole, chorionepithelioma, endometriosis, uterine displacement and prolapse, genital echinococcus, genitourinary fistulas and carcinoma of the vulva, vagina, cervix uteri and endometrium, and gynecologic radium therapy.

The full series of the League of Nations cancer of the cervix classification is shown in color plates. This will aid in the more accurate classification of cancer of the cervix. The fullest possible dissemination of such knowledge among general practitioners will bring the recognition and treatment of cancer of the cervix patient to a higher level than has at present been attained. The authors are to be commended for placing this classification in such a widely distributed, easily available textbook.

Chapters dealing with menstruation and its anomalies are long and thorough. The authors have presented the subject thus deliberately, believing that a more efficacious treatment of menstrual disorders should be given by the general practitioner. Rectal gonorrhea is discussed in some detail, since the bibliography in Spanish on this subject is extremely scanty and since it constitutes an only moderately known localization of the organism.

In all chapters theoretical discussions, the listings of hypotheses and bibliographic citations have been carefully avoided. The authors have presented the most acceptable current opinion as taught in the gynecologic clinics of Buenos Aires and La Plata. They have offered a practical point of view to the general physician and a fund of facts which in Spanish can be found only scattered through pamphlets and publications not always within his reach.

The most recent advances of gynecologic thought, the use of chemotherapy in infections, the fuller knowledge of endocrine functions and the use of artificial estrogens are included.

The chapters on neuropsychiatry in gynecology and on diet are new with this edition. For the notes on the mental impact of gynecologic disease the authors are to be particularly commended. This chapter was contributed by Dr. Jorge Thenon. The chapter on diet was written by Dr. Landebure.

Dr. Rudolpho Sammartino prepared the anatomopathologic specimens, from which Mr. Julio Rodriguez revised the prescriptions which accompany the text. Dr. Juan C. Ahumado, titular professor of clinical gynecology in the faculty of medical sciences of Buenos Aires, wrote the preface and gave his approval of the material herein presented.

Surgery: A Textbook for Students. By Charles Aubrey Pannett, R.Sc., M.D., F.R.C.S., Professor of Surgery, University of London. Cloth. Price, 35s. Pp. 740, with illustrations. London: Hodder and Stoughton, Ltd., 1944.

Much of the glamour and enthusiasm which accompany the first appraisal of any new book is lost in this case. The war effort is no doubt responsible for the quality of paper and binding used in this volume. However, the subject matter which it contains soon reveals its true worth. The author has made excellent use of a small number of illustrations and diagrams. They are of prime importance in any textbook on surgery, especially when it is written for students. The individual topics are well segregated in the text. This makes for a clearer understanding and a clearer reference availability.

It is unusual for one writer to attempt to cover the entire subject of surgery. This may result in the presenting of only one view on a controversial subject. The student especially should know that there are other and good methods and procedures in surgery. The disparaging remarks made concerning the use of the McBurney incision in appendectomies is an example. The substitute incision offered might not be so successful in other hands. The statement concerning the frequency with which chronic ulcers of the stomach are found on the posterior wall would be questioned by some. Radium alone as a treatment for carcinoma of the breast except in well advanced cases would be questioned.

Scrubbing the wound with soap and water is not sanctioned by the author in cases of compound fractures. This procedure is used by many surgeons who feel that irrigation of the wound with sterile saline solution in large quantities removes the danger of contamination which may have been carried into the wound. Infection from drinking water being considered as a factor in the production of goiter is not in agreement with the current opinions as to the cause of pathologic conditions of the thyroid.

In the discussion of bowel obstruction and resection, instruction as to the benefit of the Wangenstein constant suction appa-

ratus and the Miller-Abbott tube would be of great value. More reference to the value of the sulfonamide drugs and penicillin in combating various infections, especially gonorrhea, would be appreciated in a publication appearing at this time. The author's methods of treating fractures of the femur have shown excellent results among war casualties. The outline of the text to follow which is placed at the beginning of some of the chapters is especially helpful. A textbook of this recent date could well include some mention of the Rh factor in blood groupings and transfusions. The absence of a discussion of pathologic and physiologic processes in reference to surgery is noticed. The omitting of surgical consideration of the ear, nose and throat specialty and of gynecology is explained on the basis of their being too technical for a general surgeon.

The book fulfils its purpose as a textbook for students: it gives valuable information on many subjects.

The South African Frog (*Xenopus laevis*) in Pregnancy Diagnosis. By Abner I. Weisman, M.D., Adjunct Gynecologist, Jewish Memorial Hospital, New York, and Christopher W. Coates, Aquarist, New York Zoological Society. Aided by a Grant from the New York Biologic Research Foundation, New York. [Including] Supplement: Queries Relating to *Xenopus laevis*. Cloth. Price, \$2. Pp. 134, with 47 illustrations. New York: New York Biologic Research Foundation, 1944.

This monograph gives a concise exposition of the life of the South African frog and its care for laboratory use in the diagnosis of pregnancy. However, almost half of the volume is taken up with the historical account of the recognition of the importance of this frog in scientific studies and its geographic distribution as well as its life cycle and habits. This section should be of interest to zoologists and laboratory caretakers who require this information for the proper sustenance of normal frogs. The latter part of the volume is of value to clinicians because of the use of this type of frog for pregnancy diagnosis as well as for the pathology of pregnancy (hydatidiform mole, chorioepithelioma) and endocrinopathies. The test is simple and has a high degree of accuracy (98-99 per cent). The only difficulty in using this test is the care of the frogs, because they require special consideration as to proper temperature, water changes, tank space, frequent cleansing and proper isolation with the first appearance of any disease condition. In good laboratories all these requirements can be met; nevertheless these frogs are not as hardy as mice, rats or rabbits for the pregnancy tests in this country. The American frog (*Rana pipiens*) is unsuitable for the pregnancy test.

The advantages of the *Xenopus* frog test are that the test is speedy (six to twelve hours), the test is accurate (98 to 99 per cent), the test is simple to perform, requiring one single subcutaneous injection, the frogs are easy to maintain, according to the author, the test is inexpensive since the animals can be used repeatedly, and the end reaction is the simple observation of eggs in water. The great value of the test is in ectopic pregnancy when speedy and accurate pregnancy diagnosis is imperative. This little book is well written and therefore easily read. It has much information about *Xenopus laevis*, its value to laboratory investigations, the comparative study of the various pregnancy tests and the use of the frog in pharmacologic as well as endocrine studies. An interesting supplement contains questions directed to workers with a new test and the answers.

A Laboratory Manual of Physiological Chemistry. By D. Wright Wilson, Benjamin Rush Professor of Physiological Chemistry, University of Pennsylvania, Philadelphia. Fifth edition. Cloth. Price, \$2.50. Pp. 269. Baltimore: Williams & Wilkins Company, 1944.

As Dr. Wilson's preface states, this is a teaching manual in the laboratory practice of physiologic chemistry and not a comprehensive reference book. An introductory section comprises experiments illustrating fundamental chemical laws and those aspects of the organic chemistry of carbohydrates, fats and proteins important to the biochemist. The second section of the book contains experiments concerned with the chemical nature of body tissues and fluids and includes the material on qualitative and quantitative blood and urine analyses usually taught in medical courses in biochemistry. There are also a number of experiments designed to demonstrate the various dietary deficiencies in laboratory animals. The alternate pages of the book have been left blank so that the manual can be used as a *laboratory notebook*. The practical and continued value of the manual is attested by this being the fifth edition.

Hypertension and Hypertensive Disease. By William Goldring, M.D., Associate Professor of Medicine, New York University College of Medicine, New York City, and Herbert Chasis, M.D., Assistant Professor of Medicine, New York University College of Medicine. Cloth. Price, \$3.50. Pp. 253, with 53 illustrations. New York: Commonwealth Fund; London: Oxford University Press, 1944.

The authors of this book are definitely committed to the view that so-called essential human hypertension is not primarily of renal origin. They believe that the initial cause of this type of hypertension is some unknown humoral agent which brings about the generalized vasospasm that determine the elevation of blood pressure. The organic vascular disease, including the intrarenal and generalized arteriosclerosis so frequently found in association with essential hypertension, they consider to be secondary to the same humoral mechanism that initiates the hypertension. They admit that even in man hypertension may be of renal origin, but only when the renal disease is known to be primary. The renal vascular disease of essential hypertension they do not regard as primary. The various arguments, including the evidence presented by the recent work on experimental renal hypertension, now adduced in favor of the primary renal origin of human hypertension, fails to convince these authors, even though they themselves have shown that the only changes seen in early human essential hypertension are disturbances of renal hemodynamics and excretion. These changes they attribute to efferent glomerular arteriolar spasm, which they consider part of the generalized vasoconstriction initiated by the unknown humoral mechanism. This book is an important contribution to the literature on human hypertension. It deals largely with the work of Homer W. Smith and his collaborators, in which the authors are included. Both the body of the book and the appendix give full details about their views, methods and important contributions to the study of renal hemodynamics and excretion. Included are excellent chapters on the surgical and medical treatment of human hypertension giving full details about the management of the patient with this condition.

The Microbiology of Foods. By Fred Wilbur Tanner, Ph.D., D.Sc., Professor of Bacteriology and Head of the Department, University of Illinois, Urbana. Second edition. Cloth. Price, \$12.50. Pp. 1,196, with 5 illustrations. Champaign: Garrard Press, 1944.

The extensive compilation of information on the relationship of micro-organisms to foods as found in this edition attests the competence of the author in this field. The early chapters present the fundamentals of food preservation and a detailed discussion and classification of the organisms found in foods. Following this the author considers the microbiology of fresh and canned foods, including water. For each food there is extensive coverage of the subject with respect to normal flora of food, use of microbes in food processing, spoilage action and consideration of methods used to combat spoilage. Disease transmission is discussed where this possibility exists. There is a wealth of technical information throughout on methods for bacteriologic examination, identification of organisms and preparation of culture mediums. Official standards of purity and methods of examination are included where they exist. One section is devoted to the microbiologic assay of foods for vitamin content. The book serves an excellent purpose as a source of detailed technical information on facts and methods. It is a valuable reference source on the broad subject covered by its title, since nearly all facts quoted are supported by references, most of which are recent, and bibliographic lists follow each chapter. Its usefulness should be greatest in the teaching of technical courses dealing with food handling and in industrial food laboratories.

A Study of Variations in Output. By S. Wyatt. Assisted by E. Marriotti, W. M. Dawson, D. E. R. Hughes and F. G. L. Stock. Medical Research Council, Emergency Report No. 5 of The Industrial Health Research Board. Paper. Price, 3d. Pp. 16. London: His Majesty's Stationery Office, 1944.

This report confirms the opinion of previous investigation that reduction in hours of work affects hourly output favorably. However, great care must be exercised in interpreting results. Many additional factors must be considered, and of these technical improvements and reorganization of work are the most important elements leading to improved efficiency. The workers appreciate shorter hours, especially women with home responsibilities.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

BASOPHILIC AGGREGATION TEST FOR LEAD EXPOSURE

To the Editor:—In one of our war plants about 12 employees were overcome by fumes from solder. Can you supply any information about the McCord test? M.D., Illinois.

ANSWER.—Preferably termed the basophilic aggregation test, the procedure mentioned finds its most useful application as a screening measure in the detection of lead absorption and lead poisoning suspects in group examinations. However, it may be used in individual examinations. Any one exposed to lead who presents the subsequently mentioned blood elements in excess of 1.5 to 2 per cent should be suspected as having lead absorption or lead poisoning. In the usual early lead poisoning the percentage ranges from 3 to 6 and exceptionally as high as 15. This test is not diagnostic. In the newborn, in various anemias, in early benzene poisoning, possibly in early arsenic poisoning and sometimes after extensive exposure to sunlight or to artificial ultraviolet light the test may be positive. In long standing lead poisoning and in the presence of lead sequelae the test will not be positive.

The basis of the test is the enumeration of all red blood cells containing basophilic material, that is, preformed stipple cells, reticulocytes and red cells containing diffuse basophilic substances seen as polychromatophilic cells as stained with a Romanovsky stain. The staining procedure seeks to obtain laking of the red cells but leaving behind, within the cell form, clumped basophilic material which is much more visible under the microscope than the diffuse basophilic material as seen in a polychromatophilic cell. The stain used is:

Sodium borate	1.0 Gm.
Methylene blue	2.0 Gm.
Distilled water (boiling).....	100 cc.

The sodium borate is dissolved in the boiling distilled water and to this is added the methylene blue. After filtering, this stain is ready for use and provides a stable, satisfactory and uniform stain for at least two weeks. If used for long periods, a progressive formation of precipitate may appear.

For reasons unknown, not all batches of this stain prove satisfactory. Experience has shown the necessity of working on a trial and error basis. Apparently, best results depend on a highly critical pH value, but this value has not been standardized.

In carrying out this test, one or more thin blood smears are made on the usual microscopic slide. After air drying, one half of the smear longitudinally is overlaid with a strip of filter paper, after which this is carefully wet with a small amount of methanol for fixation. This remains in place until dry. The remaining half is unfixed. Staining is then carried out, the staining time varying with different batches of stain and ranging from thirty seconds to ten minutes. Apparently, overstaining does not occur. After staining, the preparation is gently washed in distilled water in order not to remove the unfixed cells. After air drying, counting is carried out avoiding the boundary between the fixed and the unfixed portions. Customarily the total number of the stained cells in the fixed portion of the slide are counted in five high powered microscopic fields ($\times 4$). Then the basophilic aggregations showing up as fine or coarse skeins or as clumps of unnetted basophilic material are counted in twenty fields of the unfixed portion. The percental relationship between these total numbers is then established. In healthy adults the percentage of basophilic aggregations usually ranges from 0.3 to 1.3, less frequently to 1.5. In industry a team of three persons may make four hundred of these tests daily without accident. Reference:

McCord, C. P.; Holden, F. R., and Johnston. Jan: Basophilic Aggregation Test in the Lead Poisoning Epidemic of 1934-1935, Am. J. Pub. Health 25: 1089 (Oct.) 1935.

CANCER OF RECTUM

To the Editor:—Are statistics available as to the length of survival, without operation, of patients on whom an established diagnosis of primary carcinoma (adenocarcinoma or squamous) of the rectum has been made between the ages of 65 and 70? Captain, M. C., A. U. S.

ANSWER.—The average length of life in untreated rectal cancer (adenocarcinoma) is about seventeen months.

REFRACTORY ABSCESS OF THIGH

To the Editor:—A 2 year old child was recently seen with an abscessed cavity located in the upper and outer part of the left thigh. It was closed over when first seen, but the parents report that on at least four different occasions previously it had been incised and drained; in spite of packing and drainage, it never remained closed for more than a few days at a time. On curettement the cavity appeared to be entirely above the muscle sheath but extended to a depth of an inch and a half from the skin, passing somewhat medially across the anterior surface of the quadriceps. It drained well for a few days and has remained healed since. The pathologist's report on the scrapings obtained is as follows: "Gross description: several irregularly shaped pieces of yellowish, soft, fatty and connective tissue material, the largest piece about 1 cm. in its greatest measurement. Sections from a number of different places have essentially the same picture, with a lining composed of ill formed spherical masses of rather large cells grouped roughly as tubercles but with no giant cells. There is necrosis, in the center of which there are large numbers of polymorphonuclears and broken-up nuclear material. One partially formed giant cell is identified. Special stains for tubercle bacilli do not demonstrate any organisms. Careful search of the stained material reveals no fungi. Granulomatous inflammation of the soft tissues of the left thigh, probably tuberculous. Suggest probable origin in the bone or hip joint or extension of a psoas abscess. Please let me know the outcome of your further observations in this case." I had never seen this child before, since its parents had been living in California at the time of its birth and had returned to this locality only about six months before. They live on a farm, and the only close associates during the past six months have been the grandparents and two aunts, both of whom are young women less than 20 years of age. So far as the parents know, there was no contact with any case of tuberculosis while in California. Testing of the parents, a brother, the grandparents and the two aunts give negative reactions to the tuberculin test with purified protein derivative. The patient showed a definite reaction to the second strength of purified protein derivative. X-ray examination of the pelvis, lower spine and upper femurs shows no indication of bone disease. We are all somewhat puzzled as to a possible source of infection. Is there any further test that should be made? What treatment is advised? I have suggested ample rest, a nourishing diet and exercise not permitted to the point of extreme tiredness. Ray S. Wycoff, M.D., Lexington, Neb.

ANSWER.—The ordinary means of diagnosis have been well covered in this case, but the description of the scrapings certainly suggests tuberculosis. It is suggested that some of the material be sent to a laboratory for intraperitoneal injection into guinea pigs. The guinea pig is most susceptible to tubercle bacilli, and, while a negative result does not settle the question, a positive result would. The general suggestions for care are good; during the winter months cod liver oil would be a good thing for the child to have.

ASYMMETRICAL BLOOD PRESSURE—THERAPY WITH THIOCYANATES

To the Editor:—Is there any explanation for the blood pressure being about 30 points higher, both systolic and diastolic, in the morning after sleeping than before retiring? A woman aged 55 has had high blood pressure for several years, from 200/140 to 150/85 in the left arm. The left arm usually is 15 to 20 points lower than the right. The difference in evening and morning blood pressure applies to both arms. The patient is having considerable vertigo and headache. She is taking potassium thiocyanate. The blood level of this drug is being tested weekly. What is considered a safe level? Should the dose be varied in order to obtain this level? What is considered the level of danger? What symptoms indicate toxicity?

Edward F. Hemminger, M.D., Upper Darby, Pa.

ANSWER.—Asymmetry of the arterial tension in the two arms is not uncommon: Differences of 10 mm. of mercury or more in the systolic pressure and/or 5 mm. or more in the diastolic tension were observed in 15.7 per cent of a group of apparently healthy adults. Failure to realize that such asymmetry occurs frequently is undoubtedly due to the fact that the great majority of physicians fail to make observations on both arms. Recent studies have shown that the brachial systolic blood pressure is higher in the right than in the left in 70 per cent of normal persons and in 84 per cent of hypertensive patients. The degree of disparity increases with the degree of hypertension. The Amsterdams explain the frequent observation of lower tension in the left arm by pointing out that the anatomy of the aortic arch is such that the innominate artery, from which the right subclavian artery arises, is in direct line with the blood stream in its flow in the ascending aorta, whereas the left subclavian artery comes off the aorta at a greater angle. Thus many instances of differential tension may be essentially physiologic. Pathologic conditions associated with asymmetry of the blood pressure in the arms include cervical rib, aortitis, atrophy of an extremity such as that subsequent to injury, joint ankylosis or poliomyelitis, trophic disturbances such as may occur in tabes dorsalis, and localized arteriolar constriction.

It is unusual for the arterial tension to be higher immediately after rest and/or in the horizontal position. The observations of Gambill, Hines and Adson and of Sewell indicate that the pulse pressure tends to fall with a change from recumbency to an erect posture. The question does not state whether the morning observation was made with the patient recumbent or sitting erect. It is quite possible that the reflex rise in tension

which occurs with change in position from the horizontal to the vertical is exaggerated in the patient who has so obviously a variable spastic phase of hypertension. Gambill reports that his own arterial tension was almost uniformly higher in the morning than in the evening but offers no explanation of this phenomenon. It is characteristic for the arterial tension to fall considerably during sleep, and this fall is exaggerated in anxious apprehensive individuals. It is questionable whether the episodes of vertigo and cephalalgia described can be correlated with fluctuations of the arterial tension. Coincident anemia, which is common in hypertension, may decidedly aggravate such symptoms of cranial malcirculation.

The dose of potassium thiocyanate required to keep its concentration in the blood at a safe therapeutic level (5 to 10 mg. per hundred cubic centimeters) is extremely variable in different patients. Levels of 20 mg. or more are dangerously toxic. It must not be forgotten that the colorimetric method of Barker is none too accurate and that with levels around 15 mg. per hundred cubic centimeters of blood a toxic concentration may be approached. Though this drug is usually administered three times a day the blood concentration in most instances remains fairly constant throughout the day in patients receiving appropriate quantities. No correlation has been found to exist between the urinary output of thiocyanate and the daily intake or the blood concentration of the drug. The commoner symptoms of thiocyanate intoxication, in the usual order of their appearance, are muscular weakness, papular dermatitis, nausea, vomiting, mild fever, mental confusion and disorientation, aphasia, convulsions and coma. Thiocyanate is a safe vascular depressor substance only if used conservatively and with proper safeguards. The lowest blood concentration that yields satisfactory reduction of the arterial tension should be maintained. The margin between effective therapeutic levels and toxic levels is small. References:

- Stieglitz, E. J., and Propst, D. W.: Differential Arterial Tension, *Am. J. M. Sc.* 184: 336 (Sept.) 1932.
Amsterdam, B., and Amsterdam, A. L.: Disparity in Blood Pressures in Both Arms, *New York State J. Med.* 43: 2294 (Dec. 1) 1943.
Stieglitz, E. J.: Abnormal Arterial Tension, New York, National Medical Book Company, 1935.
Gambill, E. E.; Hines, E. A., Jr., and Adson, A. W.: Circulation in Man in Certain Postures Before and After Extensive Sympathectomy for Essential Hypertension, *Am. Heart J.* 27: 360 (March) 1944.
Sewell, H.: On the Clinical Significance of Postural Changes in the Blood Pressure, *Am. J. M. Sc.* 158: 786, 1919.
Gambill, E. E.: Diurnal and Seasonal Variation of Blood Pressure, *Proc. Staff Meet., Mayo Clin.* 19: 155 (March 22) 1944.
Grimson, K. S.; Kernodle, C. E., and Hill, H. C.: Hypertension, *The Journal*, Sept. 23, 1944, p. 218.
Stieglitz, E. J.: The Diagnosis and Treatment of Cardiovascular Disease, edited by William D. Stroud, Philadelphia, F. A. Davis Company, 1940, chapter 37.
Barker, M. H.: The Blood Cyanates in the Treatment of Hypertension, *The Journal*, March 7, 1936, p. 672.
Kernodle, C. E.; Hines, E. A., Jr., and Silverman, I. J.: Thiocyanate in the Treatment of Hypertension, *Am. Heart J.* 28: 411 (Oct.) 1944.

REMOVAL OF SCABS

To the Editor:—What is the proper procedure in treating wounds that have been encrusted by scab formation? Some believe that the scabs of all wounds should be removed, while others maintain that if a scab is dry and solid with no serious accumulation underneath it should be left untouched until nature has completed healing underneath.

Gerhard W. Larfeld, Captain, M. C., A. U. S.

ANSWER.—Careful review of the extensive recent literature on the subject of treatment of wounds contains no reply to this query. The reason for this is obvious: "A dry scab with no serious accumulation underneath" no longer presents a problem; removal of such a scab will result in formation of another scab. Any suspicion of the existence of infection underneath the scab calls for its removal.

None of the bulletins issued by the Army and the Navy on the subject of treatment of the wounds contain any reference to the query.

CALCULATION OF REFRACTION IN DISPLACED EYE

To the Editor:—I am unable to find definite information regarding the change in refraction in the eye produced by displacement of the lens. Can you tell me where I can determine the change in the refractive power of a normal eye produced by a displacement backward of the lens of 1 mm.?

Lyman A. Capps, M.D., Marshfield, Wis.

ANSWER.—If the lens is retroplaced 1 mm. so that the anterior surface lies 4.6 mm. behind the anterior surface of the cornea instead of 3.6 mm. (Gullstrand schematic eye), the eye will become hyperopic by more than 1 diopter. To determine the become hyperopic by more than 1 diopter. To determine the exact amount mathematically necessitates an entire recalculation for determination of the cardinal points. For guidance in such calculations the reader is referred to Duke-Elder's Textbook of Ophthalmology, volume 1, page 735, to A. C. Percival's The Prescribing of Spectacles, page 177, and to Tscherning's Physiologic Optics, page 29.

INSECTICIDAL AEROSOLS

To the Editor:—I understand that the gas freon is used to kill mosquitoes and was wondering if it had the ability to kill the insects that are found in houses and kennels, such as fleas, flies and moths. What amount should be used figuring on the cubic feet of a room or building? I should appreciate any information you can give me on this or any similar fumigation for moths and other insects.

Charles A. Monahan, M.D., Vinton, Iowa.

ANSWER.—The gas freon is not in itself used as an insecticide, but it is used as a carrier of insecticidal materials, such as pyrethrum extract and sesame oil in the aerosol method. Articles on this subject are as follows:

- Goodhue, Lyle D.: Insecticidal Aerosol Production: Spraying Solutions in Liquefied Gases, *Indust. & Engin. Chem.* 34: 1456 (Dec.) 1942.
Insecticides for the Army: The Aerosol Insecticide Program and Its Effects on the Insecticide Industry Now and After the War, *Sci.* 18: 91 (Nov.) 1942.
Goodhue, Lyle D.: Insecticidal Aerosols, in *Pests and Their Control*, vol. 11, No. 1, January 1943.

The first named article states that "an aerosol of pyrethrum extract and sesame oil produced by spraying a solution of these materials in dichlorodifluoromethane has shown considerable promise. This solution is prepared by dissolving 5 Gm. of a purified pyrethrum extract containing 20 per cent total pyrethrins and 2 Gm. of refined sesame oil per 93 Gm. of dichlorodifluoromethane. The solvent, which has a pressure near 90 pounds per square inch at room temperature, is an odorless, nontoxic, noninflammable gas, and the resulting aerosol may be used with safety in the presence of man and animals. Entomologists have tested this aerosol and find it very toxic to mosquitoes, especially yellow fever mosquitoes, *Aedes aegypti* (L.), which are killed in two minutes when as little as 5 mg. of total pyrethrins and 10 mg. of sesame oil are suspended in 1,000 cubic feet of air. House flies and other species of flies frequently found around livestock barns are easily controlled."

The aerosols containing pyrethrum extract are at present required by the armed forces, particularly for use against mosquitoes, and are not available for civilian use.

For information on moth control, U. S. Department of Agriculture Leaflet No. 145, entitled "Clothes Moths," should be consulted.

DISCOLORATION OF SKIN FROM PERMANGANATE BATHS

To the Editor:—Kindly advise whether twice daily bathing in solutions of potassium permanganate (125 grains to each bathful of water) for even a month could result in a generalized dermatitis with bronzing of the whole body and darkening of the sclera and of the skin of the face. The patient is a man.

Aaron N. Gorelik, M.D., Bronx, N. Y.

ANSWER.—Such bathing could and ordinarily does produce a discoloration of the skin. A dermatitis could also be induced if the concentration of potassium permanganate was sufficiently strong to prove irritating. The darkening of the sclera doubtless would be produced in the same way as the discoloration of the skin. It is not likely that the permanganate would be absorbed through the skin and then carried to the sclera systemically; this chemical is so unstable as to preclude its carriage through all the organic material of the blood without being reduced.

RESISTANT PINWORM INFECTION

To the Editor:—For the past fourteen months the wife of an army officer has been under treatment at various stations for recurrent attacks of *Oxyuris vermicularis* infections. Therapy has followed the usual line such as various types of enemas, the use of enteric coated gentian violet tablets and the like. For the past four months these measures have been repeated with no degree of success. Hygienic measures have been adhered to rigidly. At no time has the stool examination revealed the presence of ova of *Ascaris lumbricoides*. The question has now been presented to this effect: Will removal of the appendix in its role as a possible harbor of refuge for the pinworms offer any degree of success in ultimate cure of this condition? Vaginal examination has not been done on this patient.

Captain, M. C., A. U. S.

ANSWER.—Assuming the several diagnoses to have been based on specific identification of the eggs or individual pinworms, it appears somewhat improbable that periodic recurrences of infection after adequate approved treatment were likely to arise without reinfection. Resort to surgery in the absence of recognizable signs or symptoms pointing to the appendix seems to be unjustified at least before a most careful critical investigation into the personal habits and hygiene of the patient and the associated human environment. Such procedure, in view of the ready autoinoculability and self-limited character of pinworm infection without reinfection, with persistent use when indicated of such anthelmintics as gentian violet, offers more promise of ultimate success in treatment than resort to removal of the appendix on a chance that egg producing female worms may be temporarily lodged there.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

Vol. 127, No. 10

CHICAGO, ILLINOIS
COPYRIGHT, 1945, BY AMERICAN MEDICAL ASSOCIATION

MARCH 10, 1945

THE USE OF INSULIN AND THE ABUSE OF GLUCOSE

IN THE TREATMENT OF DIABETIC COMA

HOWARD F. ROOT, M.D.
BOSTON

Deficiency of insulin is the cause of diabetic coma. Anew this has been demonstrated by the discovery of experimental alloxan diabetes,¹ in which diabetic ketosis and coma result when the islands of Langerhans which secrete insulin are destroyed. Here is a new method for the production of diabetic coma in its pure and uncomplicated form. Insulin cures coma because it enables the body to utilize glucose present in the blood and fluids of the tissues. It restores glycogen depots and provides energy for the body by oxidation of carbohydrate instead of fat and so stops excessive ketone production. If one would only appreciate this action of insulin, the administration of excessive glucose intravenously and by mouth with its lethal effect in patients with severe diabetic coma would be ended and more recoveries reported. My associates and I are so impressed by the reported high mortalities in diabetic coma published by those who treat it with glucose as compared with our recent series of 123 successive cases between Oct. 21, 1940 and May 1, 1944 with but 2 deaths treated without glucose that when we hear of a diabetic coma death our first question is "Did the patient receive glucose?"

In this paper I wish to present new observations and refer only briefly to such data from the series of 601 coma cases that ended May 1, 1944 as have not been given in previous reports.²

DECLINE IN MORTALITY

We naturally take pride in the fact that but 2 deaths in coma have occurred in the last 123 consecutive cases observed up to May 1, 1944, a percentage of 1.6 in contrast to 12 per cent for the 478 earlier cases (table 1). We attribute our low mortality to the more rapid administration of insulin in larger doses in the first three hours after admission to the hospital. The steady increase in dosage from 83 units to an average of 216 units during the first three hours of treatment has been due to a recognition of two facts: (1) the value

of insulin is greatest early in treatment, and (2) complications formerly regarded as lethal may be more successfully treated if coma is rapidly controlled. The maximum dose given in twenty-four hours was 1,410 units, but the average doses in twenty-four hours were 237 and 287 units for the two series. It is the insulin given in the first hours of treatment which counts most heavily.

TWO COMA DEATHS WITH AUTOPSY

A girl aged 19 years (patient 43) was transferred from another hospital on April 10, 1943 in coma of thirty hours' duration complicated by sinusitis. On arrival she was profoundly unconscious with soft eyeballs, anuric, the blood sugar was 534 mg., blood carbon dioxide 11 volumes per cent and the rectal temperature 101.4 F. With intravenous fluid and insulin, 200 units, the blood sugar fell to 190 mg. Death occurred five hours after entry. A complete postmortem examination was obtained, including the brain. The anatomic and microscopic diagnoses were purulent sinusitis, sphenoid and ethmoid; early bronchopneumonia, right; atherosclerosis of aorta; simple cysts of ovary, right; remote appendectomy. The immediate cause of death was sepsis due to infection with hemolytic *Staphylococcus aureus*.

A youth aged 19 years (patient 52) in coma of twenty-two hours' duration had received 400 Gm. of glucose in another hospital during the first twelve hours of treatment for undoubted coma. Then because of his downward progress insulin, inadequate in amount, was employed. On admission to the Deaconess Hospital the blood sugar was 680 mg., blood carbon dioxide 23 volumes per cent, nonprotein nitrogen 73 mg. He received 320 units of crystalline insulin. Death occurred in nine hours. Autopsy was negative. Death was due to delayed and inadequate use of insulin. (This is the exceptional case referred to in table 1.)

ACETONE BODIES IN THE BLOOD

An abnormal concentration of acetone bodies in the blood is an essential feature of diabetic coma. It is usually proportional to the severity of coma and the amount of treatment required for recovery; this is especially so if due allowance is made for the fact that the susceptibility of the brain to acidosis will be affected by the age of the patient, by the duration of the diabetes, by the presence or absence of acute infection and especially by such other factors as coexisting arteriosclerosis and nephritic lesions. In table 2 are listed determinations of total acetone bodies in the whole blood in a series of 31 cases of diabetic coma in which the blood carbon dioxide content was 20 volumes or less and 10 cases of ketosis in which the blood carbon dioxide content had not reached the coma level of 20 volumes per cent. The determination gives the total amount of acetone, diacetic acid and beta-oxybutyric acid in the whole blood expressed as milligrams of acetone per hundred cubic centimeters of blood. This series is arranged with the highest values for blood acetone bodies first and in the descending order. By unconsciousness is meant a state in which the patient is

From the George F. Baker Clinic, Elliott P. Joslin, medical director, New England Deaconess Hospital.

Read before the Section on Practice of Medicine at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1. Dunn, J. S.; Sheehan, H. L., and McLetchie, N. G. B.: Necrosis of Islands of Langerhans Produced Experimentally, *Lancet* 1:484, 1943.
Bailey, C. C., and Bailey, O. T.: Production of Diabetes Mellitus in Rabbits with Alloxan, *J. A. M. A.* 122:1165 (Aug. 21) 1943.
Joslin, E. P.: Medical Progress: Diabetes Mellitus, *New England J. Med.* 230:425, 1944; *ibid.*, to be published.

2. Joslin, E. P.; Root, H. F.; White, Priscilla, and Marble, A.: Diabetic Coma, *J. A. M. A.* 119:1160 (Aug. 8) 1942.

completely unresponsive to even painful stimulants and does not resist such measures as the passing of the stomach tube. Patients listed as drowsy would respond to questions, but in most instances after recovery they would not remember the passing of the stomach tube or any other incidents for a period of a day or two during acidosis; that is, cerebral function was very seriously affected. Patients who were conscious did have dyspnea but were quite able to cooperate.

The state of unconsciousness did not occur with acetone values under 100 mg. with a single exception. A girl aged 19 years (patient 43) arrived unconscious and anuric. Her death was due to a purulent involvement of the sinuses with obstruction of the nasal passages. The low concentration of acetone bodies is consistent with the disappearance of acetone bodies in the urine during the last few hours of life in severe acidosis and is in some way related to the terminal cachexia of diabetes and severe infection. In a series of 21 patients with blood acetone values of over 100 mg., 10 were female, 11 male. Only 2 were over the age of 40 years. A patient aged 72 years had an adenoma of the thyroid with hyperthyroidism; another patient aged 60 had diabetes for twenty years. It was these two older patients who were unconscious with blood acetone values of 104 and 125 mg. The duration of diabetes varied from two years to nine years. The highest blood sugar values and the highest insulin doses were required in the groups with the highest blood acetone values. The average blood sugar for the patients with blood acetone values above 140 mg. were 748 mg. Insulin requirement for the first twenty-four hours for this group of patients was 553 units, but 1 patient received only 126 units. The effect of impaired renal function in bringing about retention of acetone bodies is shown by a woman aged 76 years who entered with gangrene and auricular fibrillation. The blood acetone value was 133 mg., yet the blood carbon dioxide content was 38 volumes per cent. The nonprotein nitrogen was 61 mg., yet she made a good recovery after thigh amputation.

The rapidity with which the concentration of total acetone bodies in the venous blood of patients declines under treatment for diabetic coma deserves further

sugar was 70 mg., a result accomplished with 214 units of insulin. This is the typical change in blood acetone bodies, provided sufficient insulin is given to check excessive ketone production by the substitution of carbohydrate for fat in the metabolic mixture, probably

TABLE 2.—Total Acetone Bodies in Blood in Diabetic Coma and Precoma

January 1939 January 1944

No.	Mental State	Blood			Insulin		Age, Yrs.	Sex	Duration Diabetes, Yrs.
		Acetone, Mg. per 100 Cc.	Carbon Dioxide, Vol. %	Sugar, Mg.	First 24 Hours of Treatment, Units	Age, Yrs.			
1	Unconscious	195	7	1,230	1,770	21	♂	12	7
2	Unconscious	195	9	720	360	20	♀	7	1
3	Unconscious	167	11	1,020	770	27	♀	11	1
4	Unconscious	165	14	510	120	40	♀	11	1
5	Drowsy	162	15	540	214	16	♂	9	9
		112	24	220					
		9	43	70					
6	Drowsy	162	14	890	180	16	♂	4	4
7	Drowsy	144	3	600	308	28	♂	4	4
8	Drowsy	177	4	780	570	39	♂	4	4
9	Drowsy	143	18	526	238	26	♂	4	4
10	Drowsy	131	10	500	380	20	♂	4	4
11	Unconscious	132	9	780	376	19	♂	4	4
12	Unconscious	130	9	1,540	1,450	31	♂	4	4
13	Unconscious	120	13	530	250	15	♂	4	4
14	Unconscious	125	10	490	240	20	♂	4	4
15	Unconscious	125	12	700	340	72	♂	4	4
16	Drowsy	120	18	450	120	31	♂	4	4
17	Unconscious	118	7	340	108	17	♂	4	4
18	Conscious	118	16	260	128	18	♂	4	4
19	Drowsy	111	12	270	180	15	♂	4	4
20	Conscious	111	17	400	250	23	♂	4	4
21	Unconscious	104	12	820	780	60	♂	4	4
22	Drowsy	97	9	470	240	10	♂	4	4
23	Drowsy	90	10	510	370	39	♂	4	4
24	Drowsy	88	23	330	180	28	♂	4	4
25	Drowsy	84	16	360	156	14	♂	4	4
26	Drowsy	79	10	396	398	19	♂	4	4
27	Drowsy	79	41	370	350	14	♂	4	4
28	Drowsy	77	15	600	180	16	♂	4	4
29	Drowsy	77	5	350	264	46	♂	4	4
30	Drowsy	76	28	230	114	23	♂	4	4
31	Drowsy	74	9	550	224	50	♂	4	4
32	Drowsy	71	64	180	102	24	♂	4	4
33	Conscious	70	24	160	148	35	♂	4	4
34	Conscious	70	18	270	30	14	♂	4	4
35	Unconscious	68	12	530	350	20	♂	4	4
36	Drowsy	60	11	320	192	31	♂	4	4
37	Drowsy	60	7	290	152	20	♂	4	4
38	Conscious	58	25	300	124	23	♂	4	4
39	Drowsy	51	27	300	174	14	♂	4	4
40	Drowsy	46	32	930	216	16	♂	4	4
41	Conscious	14	51	700	90	15	♂	4	4

in part through restoration of more nearly normal hepatic glycogen.

Ketone bodies are normally present in the blood in exceedingly small amounts and are now regarded as normal metabolites. They may be formed from certain of the amino acids (ketolytic amino acids, tyrosine, leucine, isoleucine and phenylalanine) and from fatty acids. It was formerly thought that their production was due solely to the absence of oxidation of carbohydrate. Now carbohydrate oxidation is regarded as antiketogenic; in the absence of carbohydrate more fat is used, with a consequent abnormal increase in the production of these acetone bodies.² In an artificially produced ketonemia developing during a fasting cure in 1 case described by Brugel³ the blood acetone value rose to 19-20 mg. for several days, during which time the patient felt perfectly well. Barach⁴ described ketonuria in Marathon runners. The striking difference between the effects of fasting in diabetic patients and in three obese nondiabetic subjects is demonstrated by Dick, Goldner and Singer.⁵ The data obtained were compatible with Stadie's theory of a utilization limit for

TABLE 1.—Decline in Mortality in Diabetic Coma

	478 Cases January 1923 to August 1940	121 Cases August 1940 to May 1, 1944
Number of deaths	58	2
Percentage of deaths	12	1.6
Age, average	29 years	29 years
Duration of diabetes	4.3 years	5.3 years
Blood sugar	490 mg.	300 mg.
Blood carbon dioxide, average	12 vols. %	11 vols. %
Nonprotein nitrogen, average	45 mg.	51 mg.
Insulin (first 24 hours)	277 units	287 units
Insulin in first 24 hours of treatment	1927 1927	1932 1944
	83	136
		216

* Only cases showing blood carbon dioxide values of 20 volumes per cent (8.6 millimoles) or less are included with the exception of case 52.

study. In this series the fall in acetone body concentration roughly parallels that in the blood sugar. A youth (No. 5, table 2) entered in coma with a blood sugar of 540 mg., a carbon dioxide of 15 volumes per cent and total acetone bodies of 162 mg. In three hours the blood acetone level fell to 112 mg., while the blood sugar fell to 320 mg., and at the end of twenty-four hours the blood acetone level was 9 mg. and the blood

3. Stadie, W. C. Fat Metabolism in Diabetes Mellitus, *Ann. Int. Med.* 15: 783, 1941.

4. Brugel, H. G. Ueber das Verhalten des Ketonkörperpiegels im Coma diabeticum, *Klin. Wchnschr.* 21: 89, 1941; *Chem. Abstr.* 36: 6626, 1942.

5. Barach, J. A. *Am. J. Digest. Dis.* 10: 134, 1944.

6. Dick, G. F.; Goldner, M. G., and Singer, J. P. Observations on Starvation Diets and Hunger Ketosis, *Am. J. Digest. Dis.* 10: 124, 1947.

fat and a threshold for ketosis. According to Stadie the level below which fat metabolism is complete is about 2.5 Gm. per kilogram body weight daily.

It is a lack of insulin which is essential for the production of diabetic coma. It is easy to produce ketonemia in nondiabetic patients on starvation or on fat diets without carbohydrate, but no serious condition remotely resembling diabetic coma ever occurs in a normal animal or normal human being who has a normal supply of insulin, no matter what method is employed to increase the concentration of ketone bodies in the blood and urine.

As a means of estimating the critical character of diabetic coma the determination of the carbon dioxide content of venous blood continues to be in our experience the most valuable single analysis. The measurement of acetone bodies in the urine is deceptive because of failing renal function. The content of acetone bodies in the blood, while important, is not so reliable as the blood carbon dioxide in determining the degree of depletion of the alkali reserve and the imminence of lethal irreversible changes in the central nervous system.

CHANGES IN THE TOTAL BASE OF THE BLOOD AND SHOCK IN DIABETIC COMA

In table 3 determinations of total base in the venous blood in 10 cases of diabetic coma are shown with the accompanying values for total acetone bodies, carbon dioxide content, sugar and serum protein. In comparison with the normal value of 155 milliequivalents per liter, every case with 1 exception shows a reduction in total base to levels varying from 135 to 146.8 milliequivalents. The blood specimen used for base determination of patient 51, a man aged 24, was drawn after he had received 4,000 cc. of isotonic solution of sodium chloride intravenously. This patient, together with patient 50, a youth aged 16 years, whose total base rose from 146.8 to 154.8 milliequivalents in two hours and forty minutes, indicate how rapidly restoration of blood base and disappearance of shock may occur if sufficient amounts of isotonic solution of sodium chloride are given during the first two hours of treatment.

TABLE 3.—Reduction in Total Base of the Blood in Diabetic Coma

Case No.	Total Base, M Eq. Liter	Blood Carbon Dioxide, Vol. per Cent	Blood Total Acetone Bodies, Mg. per Cent	Blood Sugar, Mg. per Cent	Serum Protein, per Cent	Notes
42	135.6	17	...	308	7.1	
43	135.9	12	68	534	6.6	Death from purulent sinusitis
44	136.1	16	118	256	6.7	
45	139.3	9	195	720	9.0	
46	139.4	11	...	720	7.4	
47	139.6	18	120	350	8.7	
48	141.0	11	125	494	7.7	
49	144.6	9	60	230	6.7	
50	146.8	14	144	800	8.1	11:20 a.m.]
50	144.4	14	162	...	8.0	12:55 p.m.]—same day
50	154.8	19	...	290	9.1	2:00 p.m.]
51	155.0	7	105	1,262	5.5	Blood taken 3 hours after entry and after giving 4,000 cc. salt solution i.v.

The reduction in carbon dioxide content of the blood to values varying from 7 to 18 volumes per cent depends on the accumulation of ketones in the blood. In this series the values for total acetone bodies expressed as acetone varied from 60 to 195 mg. per hundred cubic centimeters. Dehydration is an important factor, but in this series of 10 patients only 3 show values for serum protein exceeding 8.0 per cent. These 3 cases (47, 45

and 50) had extreme ketosis, as shown by blood acetone values of 120, 144 and 195 mg. per hundred cubic centimeters, yet all recovered.

It is unfortunate that the changes within tissue cells, which necessarily depend on the surrounding extracellular fluid, are not accessible to chemical study. The diagrams of Guest⁷ and Rapoport, reproduced by

TABLE 4.—Carbohydrate in Normal Human Tissues and in Diabetic Coma (Men Weighing 70 Kg.)

	Normal		Diabetic Coma	
	Per Cent	Total, Gm.	Per Cent	Total, Gm.
50 Kg. muscle (glycogen)...	0.6	180	0.1	90
1,800 Gm. liver (glycogen)	6.0	108	1.0	18
Skin (glucose)...	0.08	4	0.56	28
21 Kg. extracellular fluids (glucose)	0.08	17	0.70	146
Total		309		282

Gamble,⁸ show the typical changes in the red blood cells during diabetic coma and recovery. A large reduction in base is consequent on the fall in base concentration in the plasma, that is, a reduction in sodium of the plasma brings about removal of potassium from the cells. This withdrawal of intracellular base in diabetic acidosis was shown by the increase in excretion of potassium in the urine described by Atchley and Loeb.⁹ Increases in hydrogen ion concentration, changes in inorganic phosphate and diffusion of chloride ions into the cells illustrate a group of structural changes important in other tissue cells as well as the red corpuscles.

The acute shock associated with burns or trauma has been shown by Rosenthal¹⁰ in experimental studies to be relieved by sodium chloride solution given by mouth or by vein with higher rates of recovery than when plasma is given intravenously. Serum was slightly more effective when given orally than when given intravenously. The effect of serum was due to its electrolyte content rather than to its protein content. Dextrose solution was without effect. Apparently the sodium ion is of such specific importance that the state of shock may be regarded as due to tissue damage resulting from sodium deficiency. Clinical confirmation is afforded by the work of Fox,¹¹ using sodium lactate solutions given by mouth. These results again support the practice of giving isotonic solution of sodium chloride subcutaneously and by vein to coma patients in shock up to 10 or 15 per cent of body weight. Smaller amounts may be ineffective.

Treatment aimed at the heart is without value in our experience in uncomplicated diabetic coma, no matter what the blood pressure or pulse rate may be. The pulseless and anuric stage of the patient is due to dehydration and shock associated with the loss of water and electrolytes, of which sodium chloride is the most important.

SUPPLIES OF CARBOHYDRATE IN BODY TISSUES IN COMA

In table 4 are shown the approximate differences in carbohydrate content of the main tissues of a normal man and a man in diabetic coma, each weighing 70 Kg.

7. Guest, G. M.: Organic Phosphates of the Blood and Mineral Metabolism in Diabetic Acidosis. *Am J Dis Child* 64: 401 (Sept.) 1942.
8. Gamble, J. L.: Extracellular Fluid. Harvard Department of Pediatrics, 1942, chart 40.
9. Atchley, D. W., and others: On Diabetic Acidosis, *J. Clin Investigation* 12: 297, 1933.
10. Rosenthal, S. M.: Experimental Chemotherapy of Burns and Shock. *Pub Health Rep* 58: 13, 39, 505 and 1429, 1943.
11. Fox, C. L., Jr.: Oral Sodium Lactate in Treatment of Burn Shock, *J. A. M. A.* 124: 207 (Jan. 22) 1944.

In Cunningham's Anatomy, seventh edition, it is stated that 42 per cent of a man's weight is muscle. In 30 Kg. of normal muscle 180 Gm. of glycogen would be present, in contrast to 90 Gm. in the muscles during diabetic coma.

In diabetic coma Geelmuyden¹² found that the glycogen content of the liver varied from 0.96 to 3.03 per cent while the fat varied from 2.63 to 7.32 per cent. Bloor¹³ points out that a reduction in the glycogen content of the liver is apt to be associated with an increase in fat content. The relationship is by no means consistent. Therefore, if the normal liver contains 108 Gm. of glycogen, in diabetic coma liver glycogen may be reduced to 18 Gm.

When the level of the blood sugar is raised to high levels the skin appears to be one tissue in which the excess sugar enters in large concentration, playing a role similar to the fields along the course of a river, which are flooded when the stream rises too high. Trimble and Carey¹⁴ analyzed the skin and muscles of diabetic patients at the Deaconess Hospital and showed that similar concentrations of sugar in the skin followed changes in the sugar of the blood. An increase in the sugar of the muscles did occur, but it was not as great as the increase of sugar in the skin. In the diabetic patients, when the blood sugar varied in 5 patients from 213 to 345, the sugar in the skin varied from 177 to 222 mg. per hundred cubic centimeters in contrast with the average value of skin sugar in non-diabetic patients of 56 mg. As determined by Bischoff,¹⁵ in one young woman and in one young man the weight of the integument amounted to 3.18 and 4.85 Kg. Assuming the concentration of glucose in the skin of a man weighing 70 Kg. with a blood sugar of 700 mg. would be roughly four fifths the concentration of the sugar in the blood, about 28 Gm. of glucose would be present in the skin, as against 4 Gm. in the normal skin.

Extracellular fluid including the blood plasma amounts to 30 per cent of body weight. The concentration of glucose in the extracellular fluid varies somewhat but in general parallels that of the blood. Venous blood sugar is stated as 80 mg. per hundred cubic centimeters, but it is known that arterial blood sugar is oftentimes higher by 5 to 20 or more milligrams per hundred cubic centimeters. It is true that the intracellular and cerebrospinal fluids contain glucose in somewhat lower concentration than the venous blood. It seems likely that with the great increase in the concentration of glucose in the extracellular fluid some increase in intracellular glucose must occur. Otherwise, harmful effects on the cell membrane might result. Another possibility in coma with excessive hyperglycemia is the occurrence of a high level within muscle or liver cells of glucose compounds or derivatives easily converted into glycogen by the action of insulin. In that case the amount of carbohydrate in the tissues in coma may well be equal to or even greater than that of the normal individual of equal weight.

The problem in treating diabetic coma is actually the problem of converting by the use of insulin a large amount of unused and unusable glucose present in the tissues of the body into glycogen and energy. The administration of glucose does not increase the oxidation

of carbohydrate during coma (Root and Carpenter¹⁶). A sufficient supply of glucose is present in body fluids to make possible glycogen formation during the six to eight hours which may necessarily precede the resumption of the diabetic diet. In twenty-four hours of bed rest the caloric requirement of 1,500 calories may be satisfied by protein 70-75 Gm., fat 65-75 Gm. and carbohydrate 100-150 Gm.

LESSONS FROM CASES REPORTED BY OTHER PHYSICIANS

Requests within a year for advice, consultation or review of 14 cases of diabetic coma with fatal outcome brought us into contact with the results obtained when patients in diabetic coma have received glucose solution in large amounts intravenously or subcutaneously. The following cases are typical of the 14:

CASE 1.—A boy aged 12 years, admitted in coma with a blood sugar of 475 mg., received intravenously 1,000 cc. of 5 per cent glucose and 50 units of insulin at 4 p. m. From 6 till 10 p. m. he was given six injections of 50 units of insulin at intervals. From 11 p. m. till 6 a. m. he was given fourteen injections of 30 units at thirty minute intervals. During this same period he received 1,000 cc. of 10 per cent glucose solution intravenously and two intravenous infusions of Hartmann's lactate solution. Karo syrup was given by stomach tube until the child had received a total of 300 Gm. of glucose (including 150 Gm. as glucose solution by vein). His fluid intake was 5,675 cc. The urine never became sugar free; acetone never disappeared from the urine in spite of the fact that he received 770 units of insulin. He died at the end of eighteen hours. Autopsy was negative. If the patient had been given no glucose intravenously or as Karo syrup by mouth but had received a moderate dose of perhaps 150 to 200 units of insulin immediately on admission, the result would have been a fall in blood sugar due to storage of the excess glucose as glycogen and the oxidation of sufficient quantity to replace and thus to reduce the excessive ketone formation from fat, with probable recovery.

CASE 2.—A girl aged 15 years entered another hospital in diabetic coma. The blood sugar was 400 mg. On admission, 600 cc. of urine was catheterized. One hour later another 400 cc. of urine was obtained. She was given 1,500 cc. of 5 per cent glucose solution not long after admission, and this was repeated three hours later. Anuria came on about one hour after admission and no urine was secreted during the remainder of her hospital stay. At the end of twelve hours the blood sugar was 667 mg. and the carbon dioxide combining power was 11 volumes per cent. At this time an attempt was being made to provoke urine secretion by the intravenous administration of 50 per cent glucose solution. This attempt naturally failed, and the child died at the end of eighteen hours with anuria. Autopsy was negative.

When coma is rapidly advancing, the administration of glucose solution intravenously does not produce diuresis and is often sufficient to tip the patient over into the stage of exhaustion and anuria, with fatal results.

HARMFULNESS OF GLUCOSE ADMINISTRATION IN DIABETIC ACIDOSIS

In the cases reported by Root and Carpenter, glucose solution given intravenously did not bring about any rise in respiratory quotient indicating any increase in glucose oxidation. When insulin is given in diabetic coma, the respiratory quotient will rise because some of the excess glucose present in the blood and tissue fluids is oxidized and some converted into glycogen. Administration of 50 or more grams of glucose in coma, as commonly practiced, is harmful because (1) no more than 5 to 10 Gm. of carbohydrate can be or need be oxidized per hour in order to check ketone formation, (2)

12. Geelmuyden, H. C.: Fat Content of Blood and Liver in Diabetic Coma, *Acta. med. Scandinav.* 53: 381, 1920.

13. Bloor, W. R.: Biochemistry of the Fatty Acids, New York, Reinhold Publishing Corporation, 1943, p. 295.

14. Trimble, H. C., and Carey, B. W., Jr.: On the True Sugar Content of the Skin and of Muscle in Diabetic and Nondiabetic Persons, *J. Biol. Chem.* 90: 655, 1931.

15. Morris, H.: Morris' Human Anatomy, edited by J. P. Schaeffer, Philadelphia, Blakiston Company, 1943, p. 54.

16. Root, H. R., and Carpenter, T. M.: The Effect of Glucose Administration in Diabetic Acidosis, *Am. J. M. Sc.* 200: 234, 1943.

glucose neutralizes the action of insulin. (3) a rise in blood sugar is produced which makes it difficult to determine the required insulin dosage. (4) such excessive hyperglycemia is harmful to the pancreas. (5) excessive glucose concentration in the blood and tissues under the condition of acidosis will result in anuria and (6) the experiments of Astwood, Flynn and Krayer¹⁷ show that excessive glucose damages the liver.

DIAGNOSIS AND TREATMENT OF DIABETIC COMA

1. *Diagnosis.*—Patients suspected of having diabetic coma belong in the hospital. Diagnosis is often difficult, especially if the degree of acidosis and coma do not correspond. In table 5 a brief summary of the clinical and chemical features of 5 recent cases is given.

2. *Preparation Prior to Hospital Admission.*—Transfer of the patient should be carried out early rather than late as an emergency measure. The hospital should be one in which laboratory service is available day and night, including holidays and Sundays. At the Deaconess Hospital a wartime diabetic coma emergency service has been organized through the cooperation of the staff and the hospital authorities. The objects of this wartime diabetic coma service are to (1) keep available a bed for a coma case, (2) provide special diabetic nurses. (3) guarantee laboratory analyses of the blood and

TABLE 5.—Differential Diagnosis in Comatose Patients

	Unconscious	Respiration	Blood Sugar	Blood Acetone Bodies, Mg.	Pulse	Blood CO ₂ , Vols
Diabetic coma	+	Air hunger	High	100	Rapid	15
Brain tumor (no diabetes)	+	Slow	Normal	0	Slow	60
Meningitis and diabetic acidosis	+	Slow	High	50	Rapid	30
Gastric hemorrhage and diabetes	+	Rapid	High	0	Rapid	60
Alkalosis due to vomiting and alkalis and diabetic acidosis	+	Rapid	High	75	Rapid	76

urine at any time and (4) offer consultative service to any doctor in the vicinity who has a coma case.

3. *Insulin.*—When it is learned by phone that a patient is to be brought to the hospital, a preliminary dose of 20-60 units of insulin is given by the home physician or by the family, provided the diagnosis seems probable. At the hospital the following preparations are made: The bed is made ready with blankets and hot water bottles, and apparatus is assembled for the giving of salt solution subcutaneously and intravenously and for the carrying out of gastric lavage and giving of an enema. On arrival the patient is put in bed well covered with a blanket and surrounded by hot water bottles placed outside the blanket, so that burns of the skin will not occur. A blood specimen and urine specimen are immediately obtained for analyses for blood sugar, carbon dioxide, nonprotein nitrogen and blood chloride. An extra box is kept on hand so that venous bloods can be withdrawn and kept under oil.

The immediate problem concerns the amount of insulin to be given in the first two hours. Two facts make the decision difficult: (a) resistance to insulin increases rapidly as acidosis advances and (b) the law of diminishing returns applies to the efficiency of insulin, so that the expected result from the second and succeed-

ing 50 units may be obtained only by greatly increasing the dose. A striking relation exists between the level of blood sugar and the total amount of insulin required in the first twenty-four hours of treatment to bring about improvement. In table 6 it is seen that in 2 adults whose blood sugars were 1,380 and 1,540 mg. the

TABLE 6.—Blood Sugar Level Correlated with Insulin Dose in 123 Coma Cases

Blood Sugar Level on Admission, Mg. per 100 Cc.	Number	Average Insulin Requirement During First 24 Hours
1,500-1,600 ...	2	1,224
1,000-1,300	15	817
600-1,000 . .	26	387
400-600 . .	9	230
200-400 ..	51	162

average insulin requirement in the first twenty-four hours was 1,224 units. The decline in insulin requirement parallels the blood sugar level. Indeed, in 51 cases out of the 123 cases in which the blood sugar level was between 200 and 400 mg. the average insulin requirement was only 162 units. It should be noted that, among patients whose blood sugar levels were less than 400 mg. on admission, in many instances some insulin had been given prior to admission by telephone order. All other measures, such as provision of warmth, fluid and salt intake, have an important place, but no question is so important as the decision regarding the total number of units of crystalline insulin to be given in the first hour of treatment. Many a patient in diabetic coma receives plenty of insulin but, owing to delays or indecision in the first two or three hours, too little insulin is given at the time when it will count the most. Insulin given six hours after admission in an unconscious patient is probably worth unit per unit less than one-third what it is worth during the first hour after admission. The average adult, drowsy and with a blood pressure over 100 mm., would receive 50 to 100 units. A child with diabetes recently discovered might need 20 to 40 units as an initial dose. However, in patients profoundly unconscious, in shock and dehydrated usually 100 units should be given subcutaneously and 50 or more units given intravenously. A second dose would probably be given one-half hour later. By the end of an hour some of the laboratory reports will be available, and with blood sugar values more than 600 mg., especially if the patient is in shock and is a patient with diabetes of long duration, we would usually expect 200 to 300 units to be administered in the first hour. The fundamental principle in the use of insulin is to give enough insulin to obtain the pharmacologic effect; namely, utilization of the excess glucose present

TABLE 7.—Schedule for Administration of Insulin

Benedict reaction Insulin (units required)	Red	Orange	Yellow	Yellow-Green	Green	Blue
	24	20	16	8	0	0

in body fluid, deposition of glycogen and cessation of excessive ketone formation. The most reliable evidence that this change in metabolism has taken place is the decline in blood sugar level. Urine and blood tests should be done at least once in two hours, and the insulin dosage may be planned in the average case in which an adequate dose has been received during the first few hours of treatment, in accordance with the schedule presented in table 7. As the patient's condi-

17. Astwood, F. B.; Flynn, J. M., and Krayer, O.: Effect of Continuous Intravenous Infusion of Glucose in Normal Dogs, *J. Clin. Investigation* 21: 621, 1942.

tion improves, the interval for the collection of specimens and giving of insulin may be increased to three, four or six hours. During this period the clinical condition of the patient, including particularly the mental state, type of breathing and the pulse, will help in deciding the plan of administration of insulin. However, no plan of treatment based on mathematical calculations of the blood sugar and carbon dioxide will take the place of constant bedside observation of the patient and adjustment of treatment to that patient's changing condition.

4. *Fluids and Salts*.—Dehydration, hemoconcentration, falling blood pressure and reduced peripheral blood flow with consequent cold, purplish extremities, dryness of the skin and softness of the eyeballs are the distinguishing features of severe diabetic coma. This shock syndrome seems to depend chiefly on the loss of sodium and water consequent on insulin deficiency and acidosis. Sunderman¹⁸ found that administration of insulin to the diabetic human being causes transfer of water and electrolytes from the serum into the tissues. Therefore in treating diabetic acidosis the administration of hot broths and saline solution early in acidosis and in liberal amount is of fundamental importance but not sufficient without insulin. Ordinarily, to unconscious patients with low blood pressure we would give simultaneously 1,500 cc. of salt solution intravenously and 1,500 cc. subcutaneously within a few minutes after admission into the hospital. This may need to be repeated one or more times within the next few hours of treatment. In patients with anuria a safe rule is to leave the needle in the vein of the arm or the ankle and let salt solution flow continuously 1 liter per hour until blood pressure rises and urinary secretion begins, provided it has been shown that the anuria is due to the ketosis and shock and not to some complication. Actually, in 2 cases reported by Root and Riseman¹⁹ anuria was relieved only when 13,800 cc. and 11,600 cc. of salt solution were given parenterally during the first twenty-nine hours of treatment. Fifty cc. of 10 per cent salt solution may be given intravenously when anuria is accompanied by a reduction in plasma chloride. The average patient will need from 4 to 7 liters of fluid within the first twenty-four hours. Enemas, not only once but repeatedly, may be necessary. The giving of fluid by mouth is limited to 100 cc. per hour only after the stomach has been washed out.

5. *Transfusion with Whole Blood or Plasma*.—Actually there has been no loss of blood protein or plasma in diabetic coma. Hemoconcentration is due to dehydration. The effective agents in diabetic coma, namely insulin, water and salt, are effective because they replace definite deficiencies. Actually there seems to be no good practical or theoretical reason for believing that plasma or whole blood is needed or can very often be of use in the uncomplicated case of diabetic coma.

6. *Gastric Lavage*.—Rarely should a patient in true diabetic coma be treated without drainage of the stomach and lavage with warm water within the first hour after admission. Usually the stomach is dilated and distended with a large amount of fluid containing food remains that are colored black because of bleeding from the stretched gastric mucosa. A pulse rate of 240 has been known to fall to 150 within fifteen minutes after a

distended stomach was washed out. A large Ewald tube is usually more effective than a small duodenal tube.

7. *Enemas*.—A cleansing enema should be given and in severe cases repeated during the first few hours of treatment.

8. *Food*.—It is our plan to begin the administration of food within four to six hours after admission, provided the patient has no complication which would prevent it, and provided sufficient insulin has been given promptly to have brought about clinical improvement. The administration of food is given hourly, 3 to 4 ounces, including warm broth, salted liquid and thin gruel or tea with a little sugar. Some patients will take a similar amount of orange juice or ginger ale. Carbohydrate 10 Gm. per hour and a total of 30 to 50 Gm. each of protein and fat usually are the upper limits during the first twenty-four to thirty-six hours. The use of intravenous dextrose solution during the first hours of treatment is contraindicated. After a sufficient amount of insulin has been given, if the patient cannot be fed by mouth, then from six to twelve hours later intravenous injection of glucose solution can be used as a means of providing food.

9. *Alkalis*.—No justification for the use of alkali is found in the record of our last 123 cases, in which only two deaths occurred. If alkalis have been used, the blood carbon dioxide value may be dangerously misleading. It is extremely important to remember that the patient in diabetic coma may still die of coma even though the carbon dioxide of the blood is raised to normal by the administration of alkalis.

10. *Stimulants*.—Patients unconscious for several hours with evidences of peripheral circulatory failure, low blood pressure, rapid weak pulse and cold mottled extremities may be given, in addition to the treatment already recommended, caffeine, epinephrine, ephedrine or transfusion. The benefits observed seem to be temporary and slight.

11. *Prevention of Diabetic Coma*.—As with some other diseases, methods aimed at the prevention of coma may accomplish more than its treatment. A patient should be taught practical and simple methods for prevention, and particularly what actions should be taken in the early stages. A patient must know how to test the urine and must realize that frequent testing of the urine at home at daily intervals should result in prompt action and medical advice when the tests show that the diabetes is not under proper control. He must know how to give his insulin dose accurately and well. He must know how to weigh and measure food and substitute one food for another. A series of simple rules should be taught to all diabetic patients no matter how mild their condition seems in its early stage. They should be in close contact with their physician in order that at intervals more careful estimates of the diabetic control may be made and in order that patients may have the advantage of new features of treatment.

SUMMARY

1. In a series of 478 cases of coma observed from May 1923 to August 1940 the mortality was 12 per cent. When the insulin given in the first three hours of treatment was increased from 83 units in 1923-1927 to an average of 216 units among 123 consecutive cases treated between August 1940 and May 1, 1944 the mortality was only 1.6 per cent.

2. Diabetic coma is an emergency due to acute insulin deficiency requiring administration of adequate, often large doses of insulin in the first three hours.

18. Sunderman, F. W.: The Water and Electrolyte Distribution in Diabetes Mellitus, *Am. J. M. Sc.* 205: 102, 1943.
19. Root, H. F., and Riseman, J. E. F.: Exceptional Requirement of Insulin and Salt Solution in Diabetic Coma, *J. A. M. A.* 110: 1730 (Mar. 21) 1936.

3. Estimation of the insulin requirement is difficult because (a) insulin resistance increases hourly with acidosis and (b) the law of diminishing returns applies to insulin.

4. Treatment should be carried out in a hospital.

5. Important aids in treatment are (a) use of isotonic solution of sodium chloride intravenously or subcutaneously administered, 4,000 cc., or, when necessary to overcome shock and impending anuria, up to 10 per cent or even 15 per cent of body weight, and (b) gastric lavage.

6. The harmful effect of glucose administration may be concealed in early diabetic coma by the insulin simultaneously administered; the moderate case of coma may be converted into a severe one requiring excessive insulin dosage. In advanced coma glucose administration either by mouth or by needle may cause anuria and death.

81 Bay State Road.

ABSTRACT OF DISCUSSION

DR. EDWARD S. DILLON, Philadelphia: Dr. Root has considered briefly most of the important therapeutic agents used in the treatment of diabetic acidosis. Of these, much the most important is insulin. He has emphasized the giving of large doses early, and with this I am in entire accord. The attending physician by the end of four hours can approximate from the chemical examinations of the blood and the clinical condition of the patient what the total insulin requirements are and realize that most of the insulin should be given within four hours and not strung out in small doses for many hours. During the first five months of this year, 15 patients with diabetic acidosis have been admitted to my service at the Philadelphia General Hospital, all of whom recovered. The average amount of insulin given was 251 units, of which 183 units was given within the first four hours. The average blood sugar on admission was 596 and the average carbon dioxide 14. The average carbon dioxide at ten and one-half hours was 51. The second important matter which Dr. Root has considered is the use of glucose. When the blood sugar on admission is above 400 there is plenty of glucose present for a vigorous carbohydrate combustion if adequate insulin is given, and there is no need of giving glucose during the early hours of treatment. The giving of glucose early seriously interferes with estimating the total insulin requirement, as all blood sugar determinations, except the one on admission, are unpredictably influenced by the glucose. However, we do use glucose, introduced by a nasal tube, in the early hours if the admission blood sugar is below 400, or in later hours if the blood sugar is falling rapidly, in order to keep out of hypoglycemia. All patients with diabetic acidosis are dehydrated. There has been severe loss of sodium and also chloride. These losses must be made up by the administration of isotonic solution of sodium chloride. Our patients usually received 1,500 to 3,000 cc. subcutaneously. I should not recommend the large amounts of isotonic solution of sodium chloride intravenously which have been suggested by Dr. Root. Large amounts of saline solution in the circulation may precipitate the syndrome of shock, not cure it. The plasma proteins are usually of normal concentration, but the total blood volume is reduced, and the total proteins are reduced. Saline solution reduces the plasma protein concentration, and the blood volume cannot be maintained. Something must be given which will stay in the circulation and maintain blood volume, and the obvious answer is plasma.

DR. ROLLIN T. WOODYATT, Chicago: I agree with Dr. Root that the prime essential in the treatment of a patient with diabetic coma is to give a decisive dose of insulin. If you do that, it really does not make too much difference what else you do. In my own clinic we manage by six hour periods. If we have a patient showing definite symptoms of acid intoxication we start with what we think will be an adequate dose. A patient weighing 60 Kg. will be given 60 to 120 units at

once. This will be repeated three hours later and again at the end of the period. Dr. Root has suggested that once in a while you may run into a patient with insulin resistance and that it might be well to double those doses against such a contingency, which I think is a point well taken. Certainly it would do no harm. In the first six hours of management of a patient with serious symptoms of acid intoxication there is no possibility of an insulin reaction. In the second period, if the patient was not deeply in when he entered, there would be a possibility, but as long as you keep sugar running through into the urine you cannot have an insulin reaction, and if in the second period the respiration has come down, the nausea has cleared and the ferric chloride reaction in the urine has become negative, you can then give 50 to 100 Gm. of orange juice or an equivalent at one hour intervals and gradually come down from period to period with the insulin dose. But as long as glycosuria and ketosis are still present the maximum doses should be sustained. I cannot too strongly endorse what has been said by the other two speakers as to the fallacy of administering glucose in the early periods of management when ketosis is present and the body is already overloaded with sugar. There never was any sound theoretical basis for that procedure. It is no new idea and there has never been any sound clinical support for it. Second in importance to the giving of adequate doses of insulin and keeping them up steadily until the patient is out of the woods is the restoration of the water balance. In our own experiments with intravenous injections of glucose and salt to produce artificial dehydration we have found that between normal hydration and extreme dehydration there may be a difference of 5 per cent or less in the body weight. And it is not necessary to restore all of the water that has been lost to annul the symptoms of clinical dehydration. It is our practice to give patients of average weight a liter of water, usually in the form of isotonic solution of sodium chloride each six hour period for the first twenty-four hours, and when that is done the tongue will be moist, the urine will be copious and the thirst allayed in the first twelve hours, as a general rule. I concur with the second speaker that 7 or 8 liters of fluid in a diabetic coma case is abnormal, unnecessary and undesirable. The giving of such quantities in general practice must lead to edemas, and it is capable of causing circulatory failure.

DR. SAMUEL SOSKIN, Chicago: To say that I maintain that sugar is more important than insulin in the treatment of diabetic coma is a misquotation and a misinterpretation. The prime need of the comatose patient is for insulin, and the first and most important thing to do is to administer adequate dosage of it. But granting the importance of insulin does not mean that carbohydrate is harmful. Dr. Root naturally sees mistreated cases when he is called in consultation by doctors who have got into trouble. It is true that they were given sugar, but the mistreatment consisted not in what they were given but in what they failed to get, namely adequate insulin and sodium. Why blame the carbohydrate? A fairer comparison with his own patients would be with a group treated by competent physicians or clinics, who have received sugar as well as adequate amounts of insulin and sodium. I am well aware of the fact that many cases of coma can be treated successfully with insulin alone. But the import of Dr. Root's statistics depends on what he calls diabetic coma. How deep was the coma? How long were the patients in coma before treatment was begun? Aside from carbohydrate administration, in what respects were the cases which he saw with other physicians treated less adequately than his own? No comparison is possible unless these questions are answered. As regards the amount of carbohydrate needed by a patient in coma, Dr. Root's calculations completely ignore the carbohydrate utilized in the first twenty-four hours, as the patient's metabolism reverts to normal under the influence of the administered insulin. Taking this into account, I have calculated that the comatose patient requires about 500 Gm. of carbohydrate in the first twenty-four hours and about 250 Gm. per day thereafter. With a low carbohydrate intake, 1 unit of insulin will be "equivalent" to 1 or 2 Gm. of carbohydrate, while on a high carbohydrate intake 1 unit of insulin may be "equivalent" to as much as 10 Gm. of carbohydrate. Dr. Root's neglect of this fact is similar to that of the chemist

who seeks to speed up a reaction by adding a catalyst but forgets that the rate of reaction is proportionate to the concentration of the substrate. In the treatment of coma I agree wholeheartedly that the most important and the first thing to do is to give insulin. But once this is done there are a number of other things which should be done in order to treat not just the coma but the whole patient. One of these is the restoration of fluids to counteract dehydration and hemoconcentration. Another, especially when the kidneys are in difficulty because of the lack of sodium, is to administer salt or alkali. And certainly still another is the administration of the carbohydrate which the patient needs for his metabolism and to restore his glycogen reserves.

DR. FREDERICK M. ALLEN, New York: It is difficult to condense into a few words my general agreement with Dr. Root and Dr. Joslin regarding the ideal of strict control of diabetic sugar, together with some doubts concerning the positive conclusions on acidosis. These clinical results are admirable and unequaled, but clinical statistics may not always establish general theories. One illustration is the amputation mortality cited in some of these meetings. Is the New York surgeon with 6 or 7 per cent mortality five or ten times as good in his methods as his colleague with five or ten times that death rate, and is Boston with a 3.6 per cent mortality twice as good as New York's best? Our hospital has more deaths than that from cardiac complications alone. Yet we feel sure that our 15 per cent of deaths under refrigeration demonstrates a real improvement and that refrigeration might save some of the few desperate cases included in the mortality elsewhere and ease convalescence for the others. Since I was long ago authoritatively prevented from continuing diabetic experimentation, I can only ask a series of questions about acidosis. Is every diabetic coma in man or dog curable at every stage? Is there a terminal stage of shock, as I formerly suggested, which is fatal in spite of clearing up of sugar acetone and without any fault of the physician's method? As to coma being due solely and invariably to lack of insulin, what about the fatal ketosis of normal fasting puppies and the coma produced in the pre-insulin era by suddenly withdrawing carbohydrate from certain diabetic patients? Does excess of glucose in any degree inactivate insulin, reduce carbohydrate utilization or increase fat metabolism? Is not the opposite more credible? Theoretically, I doubt that glucose would increase mortality. During the brief clinical crisis of coma, physicians without immediate laboratory facilities may be bolder with huge insulin doses if they are assured against hypoglycemia by moderate glucose injections. Granting intelligent administration without excesses, is glucose by vein necessarily more harmful than the carbohydrate which Dr. Root very properly feeds as soon as possible?

DR. HOWARD F. ROOT, Boston: I wonder if Dr. Allen has read the case of Grunberg and Rhodes. Their boy, admitted in early coma, was given glucose, with the result that in the next twelve hours he became moribund and the blood sugar tested every few hours reached the level of 1,600 mg. The total insulin requirement rose to 1,600 units. Patients who are totally unconscious are certainly in a more serious condition than coma patients who have not yet reached that stage. Yet even this classification may be deceptive. A child with relatively little ketosis may be unconscious because of an accompanying infection. A patient with rapidly advancing acidosis may walk and respond to questions, yet after recovery he remembers neither the gastric lavage nor any other details of his treatment. The administration of glucose may neutralize the effect of insulin in coma and therefore greatly increase the amount required. It is common knowledge that, when hypoglycemia has been caused by an overdose of insulin, glucose neutralizes the effect of insulin. Dr. Soskin would force on a critical coma case in twenty-four hours 500 Gm. of glucose. I doubt that many men in treating diabetic patients who are on their feet and doing their daily work would urge on them 500 Gm. of glucose a day. I would prefer that we enable him to utilize the extra glucose circulating in his body fluid by administering insulin and then as he recovers begin to feed him. Figures for the utilization of carbohydrate in terms of grams per unit of insulin are entirely unreliable during diabetic coma because of increasing insulin resistance.

ALCOHOLISM

A SOCIAL DISEASE

D. B. ROTMAN, M.D.

Director of the Psychiatric Institute of the Municipal Court
CHICAGO

At times of maximum stress and strain, such as is the present, we can expect big things to happen. No one doubts that the psychologic tensions released by World War I made possible the introduction in this country of modified prohibition in 1919, which in turn paved the way for the absolutisms of the Volstead Act in 1920. Many argue that, because the bad tastes of that era still linger on, that which did happen once, and so disastrously for all, could not possibly happen again. Yet it is the opinion of the Research Council on Problems of Alcohol of the American Association for the Advancement of Science that there are now indications of another drift toward prohibition.¹ Prohibition may or may not be lurking around the corner, but one need not be labeled an alarmist to insist that the problems of alcoholism were never more acute or pressing to this nation, mobilized as it is in both its manhood and its womanhood for total warfare. Any statistical statement concerning the size of this problem cannot help but be an understatement. It is easy enough to tabulate the worst chronic alcoholic addicts, especially those in the lower economic brackets, who gravitate to the courts and the state hospitals, but the more vexing aspects of the problem occur in the groups who have social and economic prestige and remain therefore statistically sequestered. H. W. Haggard's and E. M. Jellinek's suggested figure of 600,000 pathologic drinkers against a drop curtain of 40,000,000 users of alcohol is certainly a conservative estimate at least as to the number of problem drinkers.

As every acute and chronic alcoholic addict is actually a sick person, the treatment of alcoholism naturally becomes a major medical problem. As alcoholic indulgence ultimately affects in turn all of the vital organs, including the central nervous system, medical scrutiny has disclosed a wide range of clinical manifestations which in their aggregate have come to be known as "the alcoholic diseases." These diseases, either alone or in combination, set up such formidable medical problems as to tax the ingenuity of the general practitioner and his various consultants. Great progress has been made concerning the true etiology of these alcoholic diseases, particularly the role that the vitamins play in their causation. It is certainly a feather in the cap of the neuropathologist that he has been able to establish conclusively that the involvement of the peripheral nervous system by alcohol is a neuropathy (a degenerative process due to the absence of essential vitamins) and not a bona fide neuritis (an inflammatory reaction in the nervous system set up by the presence of the alcohol). Such findings have practical value in that the use of certain specific vitamins has come to play an important role in the prophylaxis and therapeutics of these diseases. But in our enthusiasms for the vitamin approach let us not forget that this type of treatment is capable of combating only the organic complications of alcoholism. Obviously they cannot alter, or even touch, its primary and essential aspects. The

1. Research Council on Problems of Alcohol, *Quart. J. Stud. Alcohol* 2: 431-451 (Sept.) 1941.

vitamin panacea has conjured up nowhere a more treacherous mirage, than in the alcoholic sector.

There are many definitions for alcoholism; one is as good as another. For our purposes any individual who exhibits a strong psychologic affinity for any one or more of the many alcoholic products, coupled with an inordinate physiologic vulnerability of his body-tissue to them, may be considered an alcoholic addict.

It is the latter half of this definition, dealing with the tissue vulnerability, that made it necessary to call on the medical and allied disciplines for possible solution. It is to these alterations in the body tissues that those of the biologic sciences have directed their major research. Appreciating their limitations, medical men have in turn been forced to call on others than biologists with a hope that a better understanding of the psychologic antecedents may be disclosed.

The psychologic aspects of the problem, as they gradually emerge, have become more and more intriguing. Research aiming at the delineation of a unitary alcoholic personality has up to date led all of us into a cul-de-sac. Efforts to squeeze the alcoholic addict into the established categories of personalities have been futile. Many have thought that because of the periodicity in the drinking of some alcoholic addicts (dipsomaniacs), and also because in many families epilepsy and alcoholism seem to be genetically linked, alcoholism must be epileptoid in character. However, according to Lennox,² electroencephalographic studies seem to refute such a concept. The epileptic and half of their near relatives demonstrate a characteristic dysrhythmia in their brain waves. No such findings have been demonstrated in the case of the alcoholic addict and his family. Definite conclusions along this line are to be held in reserve, as yet. Lennox² conservatively states that this phase of the problem is ripe for further investigation. Phyllis Wittman,³ using the Humm-Wadsworth temperament scale, compared a group of chronic alcoholic addicts with a control group. She found no outstanding epileptoid traits in the experimental group, 68 per cent of whom gave a definite history of periodic drinking.

Because of the surface affability of many alcoholic addicts and because of the "slap you on the back tendency" of most of those who are acutely intoxicated, some investigators had been inclined to believe that alcoholic addicts are cyclothymic (of extrovert tendencies). The majority of the students of the problem who have dug deeper have come up quite definitely with the schizoid (introvert) answer. Strecker⁴ sums this all up: "Contrary to the general and lay public opinion, the alcoholic is not so likely to be a hail fellow well met; the alcoholic is apt to be preponderantly introvert." Billig and Sullivan,⁵ in a Rorschach study of 40 alcoholic addicts, point out the basic introvert component present in a high degree even in a subgroup whose excellent adjustment seems to be attributable to extrovert relationships. This introvert tendency in an alcoholic addict

has a strong prognostic influence and is found in many of the cases that prove refractory to treatment. This is easily seen in the notorious example of the "solo drinker" and in all alcoholic addicts who prefer to indulge stealthily and in privacy.

In general, the Rorschach test, that *pièce de résistance* of the modern clinical psychologist's armamentarium, emerges out of the alcoholic confusion in a state of virtual stalemate. Klopfer and Kelley,⁶ authoritative American exponents of this test, are rather laconic and not too informative as they state "In general chronic alcoholics show no typical Rorschach pattern except that most chronic alcoholics yield Rorschach records which deviate considerably from the so-called normal."

As is to be expected, the psychoanalysts have stuck their tentacles into the problem. Their research has undoubtedly helped to illuminate, in some degree, the subterranean passages wherein lurk the conflicts from which the sufferer may be presumed to be seeking release through the narcosis of alcoholism. Schilder⁷ is responsible for a neatly turned epigram which he credits to Simmel, to wit, "Alcohol dissolves the superego (the individual's personal and social consciousness)." This is indeed a nice phrase, but any one who has witnessed the physical and mental tortures brought to light in the phenomenon known as the "morning after hang-over," wherein the superego is reprecipitated with such a catastrophic vengeance, could hardly take stock in the epigram.

Naturally the sex angle has been brought into the limelight by the analysts. Those who are addicted to the use of alcohol, according to them, are persons of immature sexual development. The analyst's slant is most properly epitomized in these arbitrary words credited to Abraham by Lewis:⁸ "Every alcoholic bout is tinged with homosexuality." The clinical confirmation of this alleged latent homosexuality seems to come from the observation that by far the greater number of male alcoholic indulgence is done in male company. Lewis⁹ nails this and a similar observation by Tausk to the mast thus: "Apparently this was written to the world not yet acquainted with our postprohibition excesses in women, where mixed drinking parties are the rule rather than the exception." At any rate, until the analysis can come forth with a broad cultural and educational program capable of whipping the inherent defect in the alcoholic addict's libido into more proper social channels or can furnish us with enough therapists to treat the individual alcoholic addict their pronouncements must be regarded as a species of name calling.

While discussing sex it is interesting to note some facts concerning the ratio of male and female alcoholic addicts. Myerson¹⁰ states that the ratio of female to male alcoholic addicts is 1:7 or 1:8. Jellinek¹¹ places it at 1:6. Both of these writers attribute this ratio to the strictures of our social mores, which attempt to hold women down. In Switzerland the ratio is said to be 1:12, in Norway 1:23 and in England 1:2. Columns 5 and 7 of the accompanying table and the

2. Lennox, W. G.: Alcohol and Epilepsy, Quart. J. Stud. on Alcohol 2: 1-11 (June) 1941.

3. Wittman, Phyllis: A Controlled Study of the Developmental and Contributing Factors in Alcoholism, Quart. J. Stud. on Alcohol 2: 85-93, (June) 1941.

4. Strecker, E. A.: Chronic Alcoholism: A Psychological Survey, Quart. J. Stud. on Alcohol 2: 12-17 (June) 1941.

5. Billig, O., and Sullivan, D. J.: Personality Structure and Progress of Alcoholic Addiction: A Rorschach Study, Quart. J. Stud. on Alcohol 3: 354-373 (March) 1942.

6. Klopfer, B., and Kelley, D. M.: The Rorschach Technique, New York, World Book Company, 1942, p. 399.

7. Schilder, P.: Psychogenesis of Alcoholism, Quart. J. Stud. on Alcohol 2: 277-292 (Sept.) 1941.

8. Lewis, N. D. C.: Personality Factors in Alcoholic Addiction, Quart. J. Stud. on Alcohol 1: 21-34 (June) 1940.

9. Lewis, N. D. C.: Personality Factors in Alcoholic Addiction, p. 33.

10. Myerson, A.: Alcohol: A Study of Social Ambivalence, Quart. J. Stud. on Alcohol 1: 13-20 (June) 1940.

11. Jellinek, E. M.: Outline of Basic Policies for a Research Program on Problems of Alcohol, Quart. J. Stud. on Alcohol 3: 103-124 (June) 1942.

accompanying graph represent the ratio of male and female alcoholic addicts through a span of thirteen years, 1931 to 1943 inclusive, as studied in the Psychiatric Institute of the Municipal Court of Chicago. These show a change of ratio of 1:4½ or 5 in 1931 to 1:2 in 1943. Does this changed ratio indicate the dele-

Male and Female Alcoholic Addicts

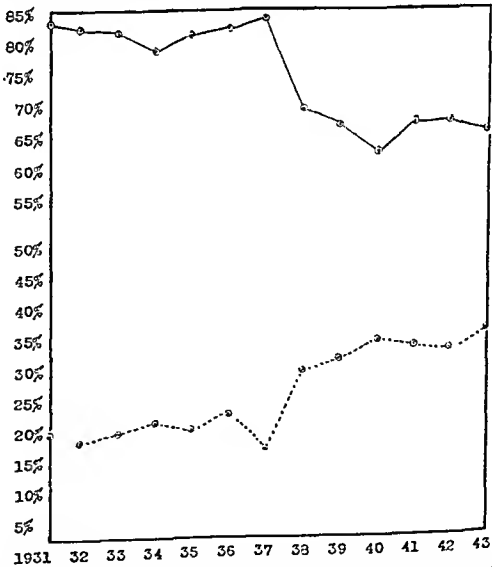
Year	Total New Cases	Alcoholic		Male		Female	
		Number	Percentage	Number	Percentage	Number	Percentage
1931	1,423	160	11.64	130	83.3	30	18.7
1932	2,038	225	11.04	186	82.7	39	17.3
1933	1,925	449	23.32	363	82.0	86	18.0
1934	1,936	497	25.67	395	79.5	102	20.5
1935	2,022	428	21.16	357	81.1	71	18.9
1936	2,183	638	29.32	498	82.1	140	21.9
1937	2,352	620	26.36	521	84.1	99	15.9
1938	2,274	624	27.74	430	69.0	194	31.0
1939	2,199	644	29.29	433	67.3	211	32.7
1940	2,079	623	29.96	395	63.4	228	36.6
1941	2,638	739	28.01	510	69.1	229	30.9
1942	2,725	749	27.49	521	69.6	228	30.4
1943	2,670	615	23.00	416	67.8	199	32.2
Totals	28,461	7,011	24.60	5,186	73.4	1,825	26.6

terious by-product of the social movement known as feminism, which has reached its peak in the varied war activities and responsibilities of women? In passing it may be noted that this 1:2 ratio approximates that of England. In fairness it must be noted that this represents a sex ratio in only extremely pathologic cases.

Much has been written about the sadism-masochism elements of the problem. It is my belief that frequently an alcoholic situation arises out of a sadistic-masochistic imbalance. Clinical observation leads me to believe that the most constant phenomenon in the entire alcoholic picture is the symbiotic relationship between a person addicted to alcohol and a nearby person of an extremely masochistic makeup. In this secondary shadow individual the submissive and masochistic elements in the personality structure are so hypertrophied as to merit the descriptive phrase "a doormat personality." This doormat personality hovers over the alcoholic addict in the dual capacity of a foil and a cushion. To the male alcoholic addict the doormat personality often is an aged and widowed mother, a spinster sister or a wife. To the female alcoholic addict the doormat personality is frequently a second or a third husband or a common law husband or a paramour acquired in her descent down the ladder of deterioration. Unfortunately we are now seeing this mechanism working to the disadvantage of the overseas soldier, whose allotment to the delinquent wife and mother at home is used by her as an opening wedge into a novitiate of a chronic alcoholic career. Once this relationship to the doormat personality is solidified, not much in the way of reversal of the situation can be expected.

Prior to the war we had all come to a critical pass with regard to drinking and automobile accidents as well as to drinking and industrial mishaps. An underlying neurosis seeking release of tension through alcoholism seemed to be the link in these allied phenomena. When we removed the mask of alcoholism, under which accident proneness was parading, frequently there stood revealed the underlying neurosis. Because of the seriousness of automobile accidents the safety of the highways demanded that highly punitive legislative steps be instituted. These legislative acts were climaxed by the introduction into court procedure of the drunkometer

and similar instruments purposing to gage the degree of intoxication registered in the alcoholic contents of the breath, the urine or the blood of the driver. The introduction of these percentages into the court record bid fair for a time to break the ancient dictum of the law that no person should be asked to testify against himself even though the testimony should be mute and chemical. It is true that the court finally held that such evidence was inadmissible, but the courts did hold that the fact that the driver refused submission to such a test could be introduced against him. These punitive upsurges were undoubtedly halted by the war emergency and the slacking speed rate prompted by genuine patriotism on the part of the motorists. This respite has given the experimental psychologist leisure time scientifically to check up on the influence of alcohol on the human psyche. Out of all the material these simple facts may be noted as being true: (1) Alcohol releases a mild euphoria, (2) there is a clouding of judgment, (3) there is some disturbance of muscular coordination, (4) there is a definite slowing down of choice reaction time. Jellinek and McFarland¹² state that "critical analysis of the total evidence of psychological investigations of experimental intoxication reveal that alcohol has a depressing effect on all psychological functions yet measured and that such stimulation as has been reported in some psychological variables is a pseudostimulation. The initial shortening of simple reaction time after alcohol turned out to be artefacts of averaging. The stimulation of muscular strength by alcohol does not seem to be the physiological effect to the absorbed alcohol. The concentration of will power after alcohol is limited to intermittent will activity only; the evidence points toward an impairment of volition in



Relative percentage of male (solid line) and female (broken line) alcoholic addicts, 1931-1943.

continuous tasks." If all of this is true, what are we to expect in the postwar period, which promises to deluge us with machines, gadgets and push buttons of the sort which will in turn ordain the very minutiae of our living?

12. Jellinek, E. M., and McFarland, R. A.: Psychological Experiments on Effects of Alcohol, *Quart. J. Stud. on Alcohol* 1: 272-371 (Sept.) 1940.

Whatever alcoholism is or is not, its universality makes it something of the people, and its partial solutions can very properly be expected to come from the people. What other explanation do we have of the phenomenal growth of the Alcoholics Anonymous? This organization in a short period of ten years has embraced over 12,000 ex-alcoholic addicts. Although we must agree with its leaders in giving religion the most of the credit for the success of this movement, I think we must look deeper if we are to understand its real worth. Those of us who have repeatedly witnessed the failure of the purely religious approach, that is the alcoholic addict's pledge to his clergyman, and the failure of treatment of alcoholic addicts in secular institutions, must indeed be skeptical as to the efficacy of the purely religious program. Truly, Alcoholics Anonymous has used religion, but what it has actually done is to implement the best principles of modern mental hygiene simultaneously. Its approach has been entirely positive. Heretofore, we of the profession have treated the alcoholic addict by constantly keeping before him the mirror of his present and ultimate degradation. This was obviously a negative attack. Alcoholics Anonymous courageously reverses this process by pointing out that good citizenship and social decency can be arrived at and sustained by ex-alcoholic addicts. Who are the mentors of the Alcoholics Anonymous movement? They are not Olympiads. Indeed, they are of the common clay of sinners and sufferers: the ex-alcoholic addicts themselves. It is not tenable for these tutors to explain to their pupils how it is possible to refrain from drinking if the mentors do not continue to refrain themselves. By this maneuver a solid foundation to the movement is already set up. It may also be that the doctors and the therapists have been too stern in their attitude toward the alcoholic addicts and have driven them to the bosoms of their fellow alcoholic addicts. This stentorian stand of our profession can be said to be best embodied in the words of Strecker:¹³ "The skilled therapist is strictly impersonal, objective and unemotional and from the very beginning must decline to deal with anything but the mature segment of the personality of his patients, no matter how minute that segment may happen to be." By thus refusing him a narcissistic bargain the therapist in many instances succeeds only in alienating the alcoholic addict from his therapist.

Group psychotherapy is all the vogue today. Its rationale and efficacy was never better demonstrated than in this mass movement known as Alcoholics Anonymous. Alcoholics Anonymous is dynamic and its potentialities for healthy contagion are limitless. It has the spread power of the chain letter. By its extreme efforts to arrive at nondenominationalism it has evolved a naive and beatific level of thinking in which the Deity is pictured as an energy source. The profile of that deity is flexible to meet any individual's need. Borrowing heavily from William James, Alcoholics Anonymous has agreed that the acceptance of this energy source need not be immediate or spontaneous or even emotional. By so doing Alcoholics Anonymous has eliminated the pyrotechnics and pitfalls usually attendant on the sawdust trail type of conversion. Above all it has eliminated the devil from its scheme of things. Any one who has seen a case of alcoholic hallucinosis and has seen the look of terror in the eyes of persons suffering from the

effects of alcohol squirming under the fancied machinations of the devil and his cohorts can appreciate the subtle therapeutic shift of this simple deletion.

What the Alcoholics Anonymous movement needs is a closer cooperation with the medical profession, and what the medical profession needs even more is a closer cooperation with Alcoholics Anonymous. As time goes on the Alcoholics Anonymous movement could stand for a more rigorous bookkeeping system in its credit and debit ledger, i. e. of its successes and failures. It must cultivate a stronger capacity for autocriticism if it is to steer clear of an unrealistic optimism which could easily cause the movement to disintegrate into a species of Couéism.

In 1932, two years before the movement was crystallized, Meyer¹⁴ anticipated such a mass effort in the following words: "A great share of the work, therefore, lies in a better understanding of the social as well as individual resources of satisfaction for the patient. Much of this work of adjustment is carried on upon a strongly individualizing basis; but even then, in the end, there will always be persons who do best when treated in groups, with the help of a sense of belonging, and being accepted, and of sharing the common convictions, whether they be religious or some kind of mystery, and an open treatment turning to the facts as found, and as they are, either under an intimate patient-physician relationship or a more socialized and open survey and utilization of assets and recognition of specific difficulties."

Can the doctor alone solve the problem of alcoholism? The answer is definitely no! More and more because of the many aspects in the problem, which I have only attempted to highlight, we must come to the inexorable conclusion that alcoholism is a social disease and that at best the doctor can be busy with only a segment of the problem. As a corollary to this conclusion we must not allow the doctor to become pessimistic of his role. Indeed it should spur him on to added effort. The medical man has an excellent precedent for a broadening of his vista regarding alcoholism. Only when we ceased looking on venereal diseases as venereal diseases per se and began to look on them as social diseases did we as doctors make real progress in the venereal problems. Working under this large canopy does not mean that we lose our identity as doctors. The greatest advances in specific chemotherapy as far as venereal diseases are concerned have come recently when we have acknowledged the total situation. It is only when we as doctors begin to see the whole problem that we can make our maximum contribution. We cannot but agree with the forthright and frank statement of Carlson,¹⁵ who honestly says "As I see it it is too complex for the biological and medical disciplines." The proper approach to the problem is exemplified in the pioneering efforts of the Yale projects of the Research Council on Problems of Alcoholism, wherein all facets of the problem are under scientific investigation and wherein particular stress is placed on the biologic, psychologic, sociologic, anthropologic and religious aspects. To these efforts the American medical profession should lend its best support.

1121 South State Street.

14. Meyer, Adolf: Alcohol as a Psychiatric Problem, in Emerson, H., and others: *Alcohol and Man: The Effects of Alcohol on Man in Health and Disease*, New York, Macmillan Company, 1932, pp. 299 and 300.
15. Carlson, A. J.: The Alcohol Problem: Possible Lines of Useful Research. *Quart. J. Stud. on Alcohol* 2: 672-676 (March) 1942.

13. Strecker: *Chronic Alcoholism*, p. 15.

BENIGN SURGICAL LESIONS OF
THE RIGHT COLON

CURTICE ROSSER, M.D.

DALLAS, TEXAS

Although only one fifth of colonic cancers are found in the right colon, the ileocecal coil is the location of the majority of those inflammatory pseudotumors of the abdomen which require surgical treatment. For many years, however, the overwhelming preponderance of lesions originating from infection of the vermiform appendix and its sequelae so overshadowed all others as to prevent the recognition of a variety of rarer pathologic involvements of the terminal ileum and cecum which are now beginning to be identified, classified and differentiated.



Fig. 1.—Thickened, constricted bowel, in tuberculoma of cecum, resembling annular cancer.

Since W. J. Mayo¹ in 1888 reported cases in which perityphlitis gave rise to palpable tumors which were difficult to differentiate from malignant swellings, numerous studies have appeared in the literature. Walters and Synhorst² aptly termed this condition a "ligneous" infection of the cecum, as it is the woody, firm tumor which confuses the diagnostic picture. Other inflammatory tumefactions, however, must be considered

From the Section on Proctology, Southwestern Medical Foundation College of Medicine, Dallas, Texas.

Read before the Section on Gastroenterology and Proctology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

Original illustrations are the work of Lewis Waters, Ph.G., P.D., Associate Professor, Department of Medical Art, Southwestern Medical Foundation Medical College.

1. Mayo, W. J.: Inflammations Involving the Cecum, Its Appendix, or Both. Tr. Minnesota State M. Soc., 1888, p. 63.

2. Walters, W., and Synhorst, A. P.: Ligneous Infection of Cecum. Resulting from Subacute Appendicitis. S. Clin. North America 6:1203 (Oct.) 1926.

in the differential diagnosis of surgical conditions of this area, chief among which are tuberculoma, simple ulcer of the cecum, the cecal extensions of regional ileitis and nonspecific granuloma of the colon.

My intent in the present discussion is to illustrate these briefly by examples recently encountered.

Hypertrophic Tuberculosis.—This condition of the intestine, restricted chiefly to the cecum, was first described by Henri Hartman of Paris in 1891. It is frequently a primary lesion. The tissue change is characterized by cellular infiltration and excessive fibrosis, with consequent thickening of the wall and constriction of the lumen. The symptoms are local tenderness and pain, occasional bleeding, flatulence and indigestion. If the disease involves a limited area of the large bowel, complete resection is indicated. In the following example it will be observed that the cecal lesion was preceded by a tuberculous anal ulcer and apparently arrested phthisis:

C. A., a white man aged 46, first presented himself in 1941 when a tuberculous anal ulcer was excised with subsequent healing. A fibrous tuberculosis of the left lung was discovered at that time. The patient was seen again in August 1943 with discomfort on the right side and across the lower part of the abdomen periodically for two years and, for six months, occasional fresh blood in the stools. His sputum was negative for tubercle bacilli on repeated examinations. A roentgenogram of the chest demonstrated that the lesion of the left lung was unchanged. A palpable mass was found in the right lower quadrant, and a colon film disclosed an obstructive lesion in the cecum which resembled cancer (fig. 1). The Kline test was negative, and the red cell count was 5,000,000. The preoperative diagnosis, hyperplastic tuberculosis of cecum, was based chiefly on the collateral findings and the blood count. At exploration the cecum was thick and pearly gray with narrowed lumen; scattered tubercles were seen on the last 3 inches of the ileum (fig. 2). An ileocolostomy was done and resection of the right colon was performed twelve days later. The pathologic examination revealed fibrous thickening of the cecal wall and a mucosa replaced by granulation tissue with areas of cellular infiltration and caseation; giant cells were found surrounding these tubercles.

Simple Ulcer of the Cecum.—This was first described a century ago by Cruveilhier.³ While he stated that the condition could occur anywhere in the colon, the great majority of cases which have been reported have been in the cecum, on the mesial side near the valve. The cause is unknown; the diagnosis in no instance has been made before celiotomy or autopsy, and every patient not operated on has died. While less than 50 cases have been reported in the literature, it is probable that numerous unreported or unrecognized instances of this disease have occurred.

Early collected reports of nonspecific colon ulcers attempted the correlation of lesions from all portions of the bowel, including instances of multiple ulceration. Because the cecal ulcers suggest a definite clinical entity more clearly than lesions in the left colon and because the latter may presumably have been the result of ulcerative colitis and other disease processes partial to the left colon, the pathologist now tends to segregate the single, nonspecific, penetrating ulcer of the right colon as more nearly answering the essential criteria for a pathologic entity.⁴

3. Cruveilhier, J.: Rectum in Atlas d'anatomie et pathologie, 1830 1832.

4. Rosser, Curtice: Simple Penetrating Ulcer of the Cecum, Ann. Surg. 119:377 (March) 1944.

The condition is encountered in both sexes at varying ages and may first present itself in an acute fulminating phase in which rapid perforation is common. In this stage the symptoms resemble those of acute appendicitis with pain, nausea, tenderness and low grade temperature. The usual preoperative diagnosis under these circum-

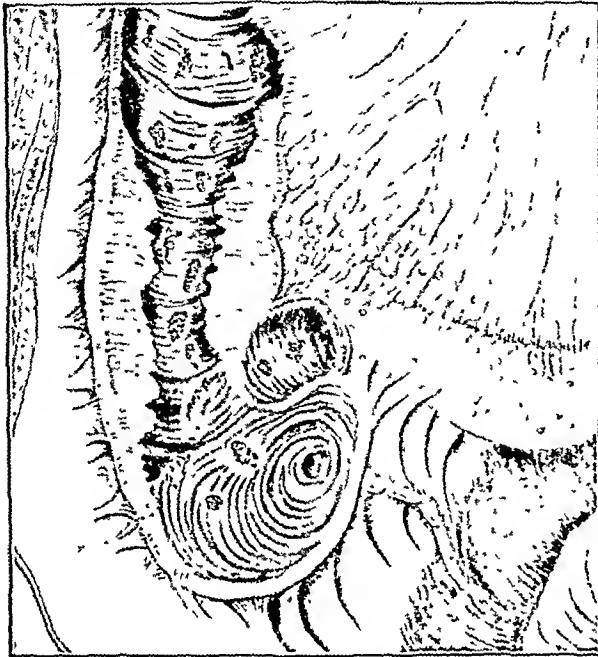


Fig 2—Tuberculoma of cecum. Artist's drawing, showing fibrous thickening of cecal wall, superficial ulceration and tubercle formation of mucosa, with tubercles on nearby ileum

stances has been appendicitis. Closure of the ulcer, in the acute stage, is effectual. A second group of cecal ulcers is seen after the condition has become chronic—often after partial perforation has occurred. The presence of tumefaction, constipation, occasional blood in the stool, vague discomfort in the lower part of the abdomen and a filling defect in the cecum has resulted, in the reported chronic cases, in an almost universal preoperative diagnosis of cancer. In the chronic stage, resection of the cecum is usually necessary. In the following case partial perforation had apparently occurred before the patient was first seen:

S W., a white woman aged 65, stated when she was examined that she had observed for some months a cramping pain in her abdomen, especially in the right lower quadrant; slight nausea was present, but the bowel habit was unchanged. A roentgenogram demonstrated a filling defect in the cecum and there was an increase in the leukocyte count, but the erythrocytes were normal in number. A mass was palpated in the right lower quadrant.

At exploration, under the preoperative diagnosis of "cancer of the cecum," the cecum was found to be enlarged, indurated and surrounded by omental adhesions and an ileocolostomy was done.

After a brief period the abdomen was again entered in January 1943, the preliminary diagnosis being "tumor of the cecum." Some free fluid was found; the conditions otherwise were unchanged. The right colon was resected at this time. The patient had a rather stormy convalescence, associated with irregular temperature. Pathologic examination revealed a firm ulcerated area (fig. 3) in the cecum 2.5 cm. from the base of the appendix. The wall of the cecum was thick-

ened and the peritoneum of the terminal ileum was thick and rough. Microscopically it was seen that the ulcer extended through all the layers of the cecum, its base consisting of granular tissue infiltrated with leukocytes with scattered round cell infiltration in the adjacent tissue. No evidence of any specific etiologic agent was found. Sections of the ileum revealed normal mucosa with infiltration of the serosa and submucosa with lymphoid cells. One lymph node was examined and revealed hyperplasia of the reticuloendothelial elements. The pathologist's diagnosis was simple ulcer of the cecum with partial perforation and subacute pericecitis and peri-ileitis.

Regional Ileitis.—This is a granulomatous proliferative process of chronic inflammatory nature which, by preference, begins at the ileocecal valve and extends upward along the terminal part of the ileum; direct extension to the cecum and ascending colon occurs frequently, which is in part responsible for the suggestion that "regional enteritis" is a better name for the lesion. Its symptom complex is characterized by pain in the right lower quadrant of the abdomen, diarrhea, fever, occasional obstructive phenomena and the formation of fistulous tracts to nearby viscera or the abdominal wall. Young men are commonly afflicted, the average age, according to Crohn,⁵ being 27.6 years.

In the acute form the bowel is red and swollen, with adherence to the omentum and adjacent peritoneum and is associated with soft, enlarged mesenteric lymph nodes. When the chronic phase is reached, the patient has lost appetite and weight and has a chronic incomplete obstruction and not infrequently a palpable mass which consists of gray, soggy, edematous, adherent terminal ileum and cecum

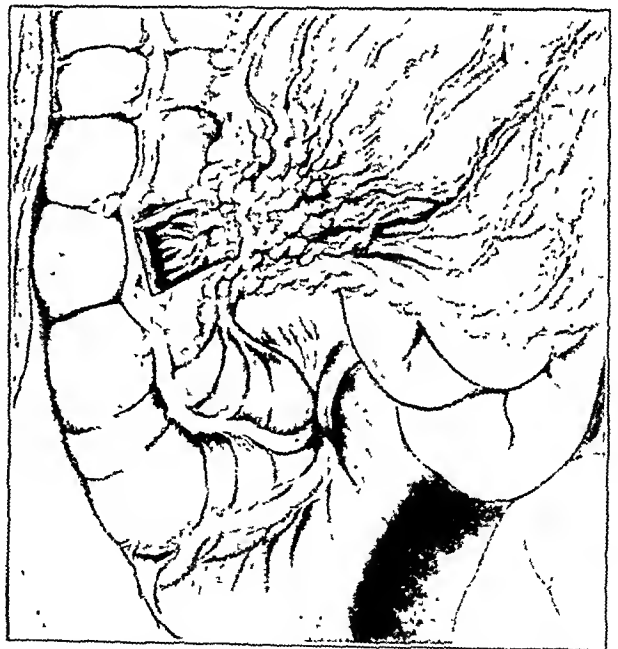


Fig. 3—Simple penetrating ulcer of the cecum. The window demonstrates the area and type of ulceration; the thickened wall and the attachment of the omentum is also shown

The treatment is surgical and consists in radical removal of the portion of the bowel involved. Lahey⁶

5. Crohn, B. B.; Ginzburg, L. and Oppenheimer, G.: Regional Ileitis: Pathologic and Clinical Entity, J. A. M. A. 99:1323 (Oct. 15) 1932.

6. Lahey, F. H., and Sanderson, E.: Lesions of the Right Colon Involving Right Colectomy, J. A. M. A. 120:1356 (Dec. 26) 1942.

has suggested that this may be done in one stage if, as is often the case, the abdomen has been entered recently and in the process of appendectomy a protective vaccination accomplished.

In the following case the pathologic process was observed in its acute phase at the time a preliminary anastomosis was done, and six weeks later, when the abdomen was entered for resection of the involved bowel, the lesion was seen to have become chronic:

P. C. P., a white man aged 28, had a history of chronic ulcerative colitis of the left colon with recurrence over a prolonged period. This condition had recently been brought under control. Six weeks before operation, however, diarrhea recurred, associated with intermittent fever and pain in the right lower quadrant. Roentgen examination of the bowel disclosed a contracted terminal ileum. No definite mass could be palpated. In June 1943 the abdomen was entered and an ileotransverse colostomy performed. The last 8 inches of the ileum, the ileocecal valve and the first 2 inches of the cecum were seen to be thick, red and corrugated and a number of soft glands were palpated in the mesentery (fig. 4).

Following the anastomosis the patient continued to manifest increased temperature, complain of right abdominal pain over a palpable tumor and to lose weight. A fistula developed in the wound. In August the terminal ileum and right colon were resected. At this time the involved bowel was found to be gray, very thick and soggy in appearance, with a very narrow lumen (fig. 5). Examination of the tissue revealed that the specimen consisted of the right colon and 38 cm. of the terminal ileum. The surface of the cecum was smooth, glistening and grayish pink to dark red; its wall was thick and firm. The appendix was found to be firmly adherent to the cecal wall, and there was pronounced thickening in the region of the ileocecal valve,



Fig. 4—Regional enteritis: Acute phase, showing swelling of the terminal ileum and cecum, with corrugation of the surface and enlarged soft mesenteric glands.

the lumen being considerably constricted in this region. The mucosa was smooth, glistening and grayish pink. Rugae were present and no ulcerations were noted. The wall of the ileum was much thickened, varying from 2 to 3 cm. The mucosa was smooth, glistening and grayish red. There were multiple superficial ulcerations with several polypoid-like projections into the

lumen and also multiple yellowish white, granular appearing areas on the surface. In between the areas of ulceration there were cordlike elevated areas in the mucosa. There were multiple enlarged glands throughout the attached mesentery. Microscopically the mucosa consisted of straight tubular glands, which in many areas were completely surrounded by thick massive

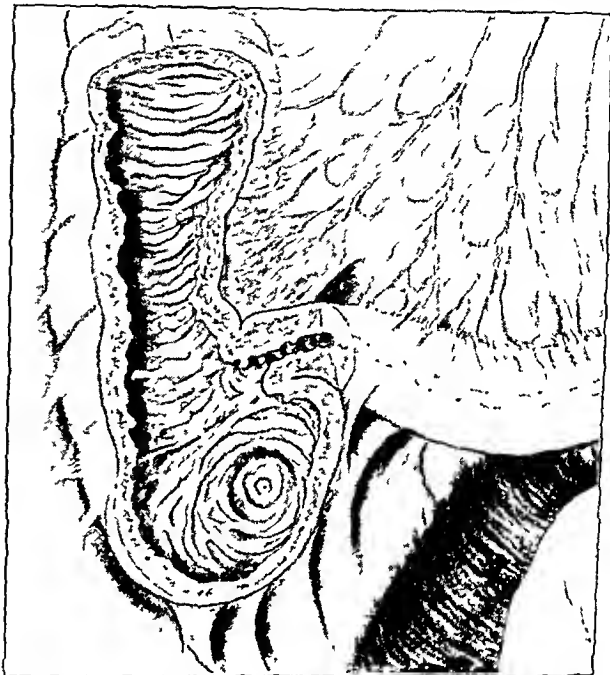


Fig. 5—Regional enteritis: Chronic phase, showing thickening of wall of cecum and terminal ileum. Extreme constriction of lumen of small bowel, erosion and ulceration of mucous membrane.

infiltrations of polymorphonuclear neutrophilic leukocytes, eosinophils, plasma cells, macrophages and lymphoid cells. These tubular glands were composed of simple columnar cells, most of which were of the goblet type. The ducts of these glands and their crypts were filled with mucus. In many areas there was necrosis of the mucous membrane with ulceration. The ulceration in some of the sections extended through the corium and into the submucosa. In the areas where the mucous membrane remained intact there was increased vascularity, and the submucosa likewise showed pronounced infiltration with the cells enumerated. The aggregate lymph follicles of the ileum were almost entirely destroyed and replaced either by masses of eosinophils, polymorphonuclear neutrophilic leukocytes, lymphoid cells, macrophages or adipose tissue. In the areas of the submucosa where polymorphonuclear infiltration was not so massive there was increased proliferation of the fibrous connective tissue. The muscular layers also showed diffuse cellular infiltration and fibrous tissue proliferation which resulted in a thickening of the muscular walls. Section of one of the lymph nodes showed the capsule and architecture of the node to be intact, but there was definite proliferation of the centers. The pathologic diagnosis was regional ileitis, cecitis and colitis. The patient died eighteen days after the resection from a pulmonary embolus.

Objection has been raised⁷ to separating from this granulomatous, progressively extending and migrating disease involving the bowel wall a rarer group of massive, localized, nonspecific neoplasms which occur in the colon and in other portions of the bowel, but Crohn⁸ believes that, although the etiologic agent may well be the same, the gross appearance, anatomic loca-

7. Wilemsky, A. O.: Essential Nature of Nonspecific Granulomatous Lesions of the Gastrointestinal Tract, *Surgery*, 6: 288 (Aug.), 452 (Sept.) 1939.

8. Crohn, B. B.: Personal communication to the author in May 1942.

tion and dissimilar method of growth and extension warrant their separate consideration.

Moylman⁸ in 1906 described six inflammatory tumors of the large intestine which, before exploration, he confidently expected to be cancers and differentiated these tumors from tuberculosis. In 1908 Mayo-Robson⁹ described 11 such cases, some found in the cecum and large intestine, and later Braun⁹ added 3 instances of granulomas of the splenic flexure to the previous experience.

Localized nonspecific granulomas of this type, while of unknown origin and while presenting a microscopic picture somewhat resembling regional enteritis, do not cause diarrhea, stricture and fistulous tracts; they tend to increase in size while remaining at one area in the bowel. I encountered a neoplasm of this type two months ago in a man aged 74 who for one year had noticed constipation, flatulence, indigestion and cramping in the lower abdomen and who, on examination, was found to be anemic and underweight and to have a firm palpable tumor in the right lower quadrant of the abdomen. When the right colon was removed by the Lahey technic, the tumor so resembled an adenocarcinoma, because of its texture, indurated surface and absence of change in the adjacent bowel (fig. 6) that the pathologist's report was the first intimation that the lesion was benign.

It is difficult to suggest a clearcut diagnostic differentiation between cancer and these inflammatory conditions because of such common factors as tumefaction, similar roentgenographic appearance and chronicity.



Fig. 6.—Nonspecific granuloma of cecum, encountered in white man aged 74. Terminal ileum and remainder of cecum are normal.

All of the latter, however, are usually associated with some temperature elevation and with increased leukocyte count; anemia is not pronounced, and the tumor is usually more sensitive. It is perhaps quite fortunate

that surgical intervention is indicated in each of these conditions, because if a patient has received the extended and adequate preparation now considered essential in large bowel surgery before the abdomen is entered, any discrepancy in the preoperative diagnosis can be safely corrected and the proper procedure instituted at the time of surgery.

710 Medical Arts Building

ABSTRACT OF DISCUSSION

DR. WALTER A. FANSLER, Minneapolis: The largest single series of cases of solitary ulcer reported is 15, and in none of those was the correct diagnosis made. Of those 15 cases there was a diagnosis of appendicitis in 6, peritonitis in 2, intussusception in 1 and carcinoma of the cecum in 1. Ten of the cases had perforated at the time of operation. There were 9 deaths, 5 were cured and 1 result was not stated. In 4 of the 5 recoveries, perforation had not occurred. I can add 1 case to this group: A woman aged 47, whose first complaint was a hemorrhage from the rectum with numerous dark clots seven months preceding examination, observed no more blood until two days previous to examination. Proctoscopy was negative except for some dark digested blood in the rectum. There was no history of diarrhea. Her temperature was normal, and, as far as could be found from the family physician, she had not had any elevation of temperature. Hemoglobin was 11.7 Gm., or 71 per cent, erythrocytes numbered 3,400,000, the white blood cell count was 7,200 and the differential count was normal. A hard mass about the size of a golf ball could be felt in the region of the cecum. This was freely movable and was not tender. My diagnosis was probable carcinoma of the cecum, and the roentgenologist agreed. A double barreled ileocolostomy was done as described by Lahey. On opening the bowel I found a sluggish cratered ulcer. The walls surrounding the crater were approximately 1.5 cm. thick, gradually thinning out toward the periphery of the induration. It had a gross appearance of a chronic ulcer one sometimes sees in the stomach. The microscopic examination showed chronic inflammatory changes with leukocytic infiltrations which extended down to the serosal surface. The patient made an uneventful recovery. The point I wish to make in this discussion is that in ulcer of this type there is no possible method of making a differential diagnosis between this condition and carcinoma of the cecum. Therefore the possibility of this condition should be kept in mind in preoperative conversation with patients.

St. Jerome and Vitamin A.—The following passage, taken from St. Jerome's "Life of St. Hilarion," which was written about A. D. 392, appears to be the earliest account of the etiology, symptoms and cure of severe vitamin A deficiency: "From his thirty-first to his thirty-fifth year he had for food 6 ounces of barley bread, and vegetables slightly cooked without oil. But finding that his eyes were growing dim and that his whole body was shriveled with an eruption and a sort of stony roughness (impetigine et pumicea quadam scabredine) he added oil to his former food and up to the sixty-third year of his life followed this temperate course, tasting neither fruit nor pulse, nor anything whatsoever besides." This combination of an eye affection, nightblindness or perhaps xerophthalmia, with a severe hyperkeratosis precisely resembles the condition described by Frazier and Hu (*Arch. Dermat. & Syph.* 33:825, 1936) as occurring in Chinese patients who had received a diet not unlike that of St. Hilarion, namely a cereal other than wheat, white cabbage and salted vegetables. These patients were speedily cured by cod liver oil or carotene; and it seems probable that crude and unpurified olive oil, such as St. Hilarion would have permitted himself, would contain enough of the fairly high vitamin A content of the olive to relieve his symptoms and maintain good health. The evident accuracy of St. Jerome in this particular may induce further study of this interesting biography.—Taylor, F. Sherwood: St. Jerome and Vitamin A, *Nature*, Dec. 23, 1944, page 802.

THE INFLUENCE OF GYNECOLOGIC DISORDERS ON THE URINARY SYSTEM

J. MASON HUNDLEY JR., M.D.

AND

WILLIAM K. DIEHL, M.D.

BALTIMORE

As can be readily understood, the presentation of such a comprehensive topic requires the elimination of many of the self-evident phases which are so well covered in the various gynecologic textbooks. For a number of years we at the Hospital of the University of Maryland have been greatly interested in the various changes in the urinary system, particularly those due to pelvic and obstetric conditions. With us, female urology is a division of gynecology, for by this union we feel that the gynecologist is singularly fitted for the evaluation and treatment of urologic problems occurring in women. One of the most important factors in the treatment of any urinary lesion is a careful preliminary pelvic examination in order to rule out the presence of gynecologic disorders which may be evidenced only by urinary manifestations. It is not uncommon for a patient with frequency and dysuria to have the bladder and trigone treated while the causative factor is a moderate sized myoma on the anterior uterine wall.

The subject will be discussed in relation to the three most important etiologic factors. The first and probably the most outstanding is the changes produced by pressure. Several years ago we published an article on the physiologic changes occurring in the urinary tract during pregnancy,¹ and, as the changes in the urinary system associated with the developing pregnant uterus are so frequent and so typical, a brief review of this work will be of value, for lessons here learned also apply to other etiologic factors which are of a pathologic nature.

For many years it has been known that dilatation changes occur in the urinary tract during pregnancy, but it was not until the development of intravenous urography that we have been aware of its nearly constant occurrence. In our urographic study of 27 normal pregnant women throughout the succeeding months of gestation and the puerperium, the most constant change noted was a dilatation of the pelvis and calices of one or both kidneys, a dilatation, tortuosity and kinking of one or both ureters, and a lateral displacement of these structures. In addition, there was an apparent atony of the ureteral musculature observed. Every patient showed some deviation from the normal, the right kidney and ureter being more affected than the left. The dilatation of the ureter always began at the pelvic brim and in not 1 of the patients studied was there found a definite and significant dilatation of the pelvic portion of this structure. With the advance of pregnancy the dilatation of the upper urinary tract gradually increased to the time of delivery, and following this event there was a rather rapid regression to the normal state, taking place as a rule in twenty-eight days. It is a well known fact that the presence of frank infection greatly retards this normal involution process. In this urographic study it was found that with the progressive dilatation of ureter and pelvis there

was an associated retardation of the excretion time of the kidney, so that a delay of thirty to forty-five minutes was necessary before a satisfactory film could be obtained. Associated with this delayed excretion time there develops an apparent increasing atony of the ureteral musculature. We believe that dilatation of the ureter is produced by two factors; first, changes in the ureter due to hormonal stimulation, as shown by muscular hypertrophy, increased vascularity and loss of tone. This changed, succulent tube is then subjected to the pressure of the semicystic, pregnant uterus at the pelvic brim, with resulting dilatation. We feel that if the primary hormonal changes had not taken place the soft, vascular uterus could not exert sufficient pressure on the dense wall of the ureter to produce dilatation. From microscopic studies we have previously shown that the ureter during pregnancy undergoes rather constant and typical changes. One of the most striking of these is the pronounced muscular hypertrophy of the sheath of Waldeyer, i. e. the outer longitudinal layer of musculature which invests the lower 3 to 6 cm. of the pelvic ureters. There is also seen muscular hypertrophy throughout the length of the ureter, confined for the most part to the circular layer. The ureter becomes vascular, soft, dilated and ribbon-like. The opinion has been advanced that this hypertrophied sheath of Waldeyer

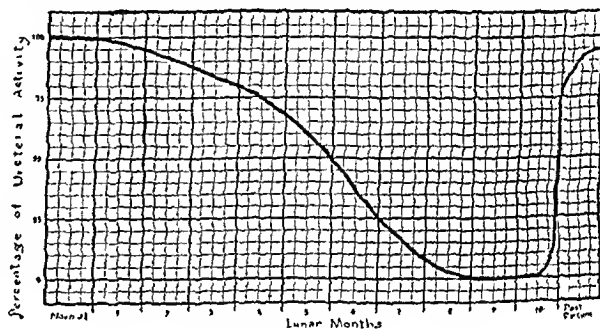


Fig. 1.—Peristaltic changes throughout pregnancy.

is the important causative factor in dilatation of the ureter. If this is correct, the dilatations should be bilateral and should begin at the bladder. Our findings have not supported this view, for, as already stated, the changes always begin at the pelvic brim and the right ureter is much more affected than is the left. This increased incidence of right ureteral involvement is due to dextrorotation of the uterus, to cushioning of the left ureter at the pelvic brim by the overlying sigmoid and also to the fact that the right ureter crosses the pelvic brim nearly at a right angle, making it more vulnerable to pressure. The course of the left ureter is much more of a straight line and is consequently less subject to pressure effects. We believe that the vast majority of investigators are now of the opinion that dilatation of the ureter at the pelvic brim is due to pressure, this being the concept originally promulgated by Opitz in 1905. We feel that this theory was definitely proved by the experiments we conducted with the use of the indwelling catheter during the later stages of pregnancy. It was shown that if continuous drainage of the upper urinary tract with the indwelling catheter was maintained for forty-eight to seventy-two hours there was a definite regression of the dilated pelvis and abdominal ureter.

Is there sufficient evidence to support our views that the urinary tract is subject to hormonal stimulation? We feel that the following data do support this opinion, which is of scientific as well as of clinical interest.

Read before the joint meeting of the Section on Obstetrics and Gynecology and the Section on Urology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.
1. Hundley, J. M., Jr., and others: *Am. J. Obst. & Gynec.* 30: 625, 1935.

When one considers the embryologic development of the generative and urinary systems, the two arising from the same anlage, it does not seem too hypothetical to believe that the hormonal influences elaborated during gestation could affect the two systems in the same man-

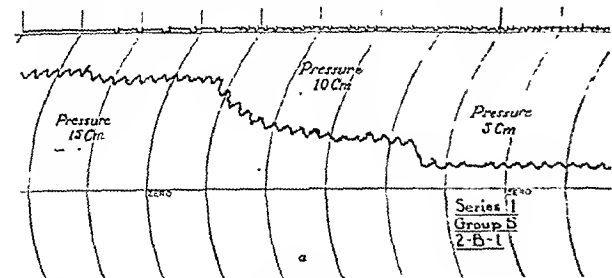


Fig. 2.—Base line tracing before treatment with diethylstilbestrol.

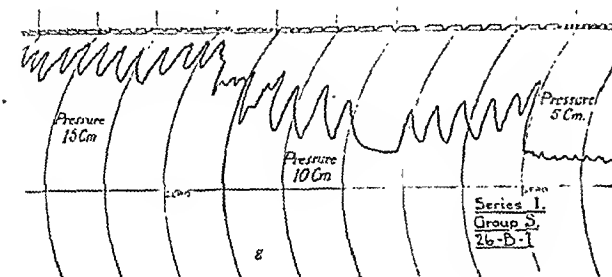


Fig. 3.—Increase of peristaltic activity following six weeks of diethylstilbestrol therapy.

ner. As already mentioned, one of the most outstanding evidences of hormonal activation of the urinary tract is that of the pronounced hypertrophy of the musculature throughout the ureter and especially in its lower end, namely the sheath of Waldeyer. This cannot be considered a work hypertrophy, for we found these same hypertrophic changes in a patient dying following an operation for an ectopic pregnancy of seven weeks' duration, when it was impossible to have pressure because of the small size of the uterus. Other evidence to support this hormonal theory is presented by the autopsy findings of a man dying from a teratoma of the testicle with generalized metastasis, which proved to be a chorionepithelioma. Prior to operation the urine had been strongly positive for anterior pituitary-like substance on two occasions. The examination of the ureter showed definite hypertrophic changes throughout the entire organ but was most evident in the juxtavesical portion. Here there was tremendous hypertrophy of the sheath of Waldeyer, the greatest external diameter measuring 8 mm., the measurement of the normal non-pregnant ureter in the same location being about 3.5 mm. Another factor that seems to support the endocrine theory of ureteral activation is that following delivery, and with the rapid decrease of the hormonal content of the urine due to the absence of the placenta, the main source of estrogenic and anterior pituitary-like substances there is a progressive and rather rapid regression of the urinary tract to its normal state. Knowing of the work of Traut and McLane on ureteral peristalsis during pregnancy, we wished to confirm if possible their observations, for we felt that the peristaltic variations they noted might be dependent on hormonal influences and not on muscular work fatigue, as might be supposed. If we could demonstrate that these variations were due to hormonal influences we would then have additional confirmatory data to support this hormonal theory as an

etiologic factor in ureteral changes. We found, as they did, that there is an increasing atony of the ureter with advancing pregnancy and that beginning with the end of the second trimester there is a complete loss of tone, with absence of peristalsis. There is a return of peristalsis just prior to parturition, which then continues on through and after the puerperium. Figure 1, a composite graph, depicts the peristaltic changes throughout pregnancy.

In order to carry out these experiments on ureteral peristalsis, Trattner's hydrophorograph was used. The details of the procedure are given in the original article.² After completing this study of ureteral behavior during pregnancy and observing the very striking atonia that developed, we then attempted to prove that the peristaltic activity and atony were dependent on hormonal influences. We know that during pregnancy large amounts of estrogenic and progestogenic substances are elaborated in the placenta. The estrogenic substance produces growth and also causes contraction of the uterus, whereas it is generally thought that the progestogenic substance allays uterine activity. By priming normal women with large and prolonged doses of estrogenic and progestogenic substances we hoped to simulate in a measure hormonal conditions that exist during pregnancy and possibly produce the same ureteral behavior that normally occurs during this period. A brief summary of the experimental results follows: Eight normal women were treated with diethylstilbestrol, each receiving orally 2 mg. twice daily over a period averaging ten weeks, the patient thus receiving a total of 280 mg. Weekly hydrophorographic tracings were

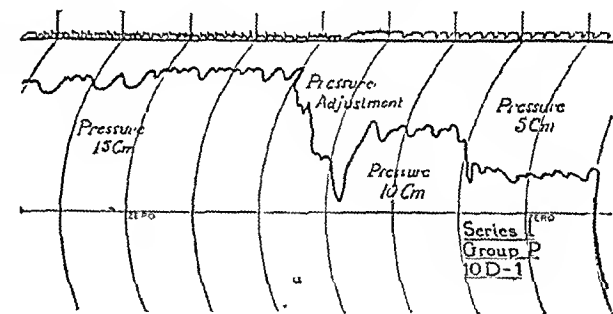


Fig. 4.—Base line tracing prior to progestogenic therapy.

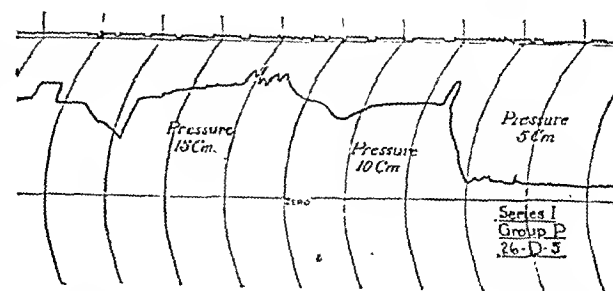


Fig. 5.—Absence of peristaltic waves following six weeks of progestogenic therapy.

made and there was noted a great increase in peristaltic activity as shown by the great increase in amplitude of the contraction waves. For comparison see figure 2, a base line tracing before treatment with diethylstilbestrol, this being the usual pattern for the normal woman.

2. Hundley, J. M., Jr.; Diehl, W. K., and Diggs, E. S.: *Am. J. Obst. & Gynec.* 44: 558, 1942, from which figures 1, 2, 3, 4, 5 and 6 in the present article are taken, through the courtesy of the American Journal of Obstetrics and Gynecology.

Now compare this with the tracing obtained after six weeks of treatment with diethylstilbestrol (fig. 3). Here is seen a great increase of peristaltic activity.

In order to determine whether allaying of ureteral activity and final atonia developed under the influence of a progestogenic substance, another group of 8 normal women was selected. These women received an intensive course of progestogenic therapy over a period of nine weeks, each receiving weekly proluton 8 mg. intramuscularly and in addition pranone 280 mg. orally, making a total dosage that each received, proluton 72 mg. and pranone 2,520 mg. No symptoms referable to this intensive therapy were demonstrable. Weekly hydraphorographic tracings were made, and there was noted a gradual decrease in the amplitude of the peristaltic waves until complete atonia existed. For comparison see the normal pattern of ureteral activity before progestogenic therapy was begun (fig. 4). Now compare this with the tracing obtained after five weeks of intensive therapy and there will be noted complete atonia, this effect being similar to that observed in the pregnant woman of thirty weeks' gestation (fig. 5). It would seem from these two experiments that hormonal influences play a definite role in ureteral behavior, the estrogenic substance activating the peristaltic contractions and the progestogenic substance allaying these contraction waves.

EFFECTS OF UTERINE AND OVARIAN TUMORS ON URINARY SYSTEM

We have briefly presented the physiologic changes that occur in the urinary tract during pregnancy as well as demonstrating the hormonal influences on this system. Now we wish to consider what effects uterine and ovarian tumors and parametrial carcinoma have on the urinary system.

In a previous publication we reported a group of urographic studies associated with large pelvic tumors, showing preoperative and postoperative changes. We

ureter associated with a large intraligamentous myoma, but we have not seen such a change with a parovarian cyst. In many of the patients with large pelvic tumors intravenous urograms were made before and after operation. A striking example is here shown of the result of pressure due to a large fibroid tumor which had been



Fig. 7.—Dilatation of the ureter due to parametrial extension from carcinoma of the cervix.

present for many years (fig. 6A). The tumor was removed, and thirty-eight days after the operation another intravenous urogram was made (fig. 6B). Here is strikingly portrayed the wonderful recuperative power of the urinary tract once there has been a release of pressure and obstruction.

As is well known, one of the most frequent causes of bilateral hydroureter and hydronephrosis is parametrial carcinoma having metastasized from the cervix. In our oncologic clinic approximately 65 per cent of the patients have parametrial involvement with potential associated degenerative changes in the kidney. A common symptom observed in this group of patients is nausea and vomiting associated with a mounting non-protein nitrogen and kidney failure. As the metastatic growth envelops the lower end of the ureter more snugly, complete anuria may ensue, with death occurring as late as ten days after the onset. Pathologic studies show the ureter completely surrounded by growth in its juxta-vesical portion, and above this occlusion there is seen pronounced dilatation of the entire tract (fig. 7).

The second most important factor to be discussed is the pathology of the urinary tract as a result of parturition. As is known so well, multiple and difficult labor are the main factors in the production of relaxations and lacerations of the pelvic floor. Many of these lesions, while minimal during the earlier years, become much more pronounced near or after the menopause. The lesions in which we are here most interested are those that cause some derangement of the urinary tract. The majority of the conditions are true hernias due to stretching and tearing of the fascial supports, and it is

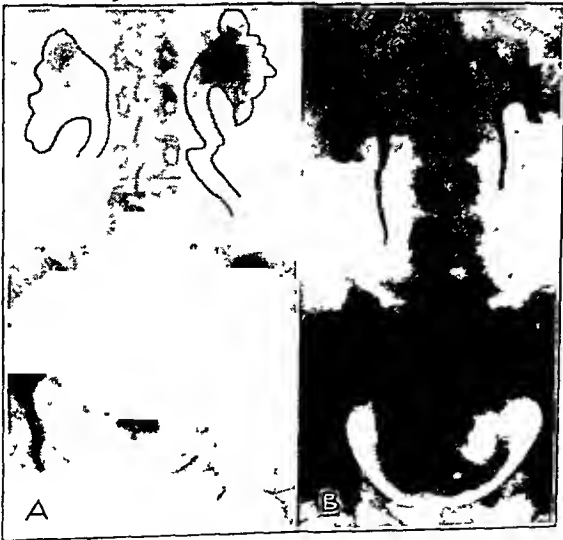


Fig. 6.—Urograms showing (A) pressure effects due to large fibroid tumor and (B) regressive changes thirty eight days after operation.

were able to demonstrate that definite pressure effects, as evidenced by dilatation of the upper urinary tract, were produced when the pelvic tumor was of sufficient size and contour to exert pressure on the ureter, usually at the pelvic brim. Naturally these changes are more prone to occur with the denser type of tumor which is fairly well fixed. It is not uncommon to find a hydro-

more common to have several coexisting lesions than single entities. Malpositions of the uterus with descensus, endocervicitis, cystocele and rectocele are common handmaidens and are all so excellently presented in the various textbooks that only certain aspects will be here discussed. We think we all are in accord that lesions that affect the bladder and urethra are much more provocative of symptoms than those that affect the recto-vaginal septum. A cystocele associated with uterine prolapsus gives primarily symptoms of frequency and dysuria, and occasionally inability to empty the bladder completely if there is a dependent pouch below the urethra. Many patients state that in order to void satisfactorily the prolapsed uterus and cystocele have to be replaced. When a cystocele has existed for years with an associated descensus, cystitis is common, as the result of stasis of urine with resulting infection. Uterine prolapse may also play an important role in the production of hydronephrosis and hydroureter, as reported by various authors. The etiologic factors are due to compression of the lower ends of the ureter either at the point of their herniation through the hiatus genitalis or by the drag of the prolapsed uterine arteries.

Another condition of considerable interest is that of stress incontinence, which is characterized by involuntary spurting of urine on stress or strain; even laughing or coughing may produce this distressing situation. This condition is seen in postmenopausal women with a normal appearing urethral tube and also in women as the result of obstetric trauma, with a subsequent weakening or relaxation of the urethral sphincter mechanism. In the postmenopausal patient who suffers from stress incontinence there is frequently seen a pronounced trigonitis that accompanies the regressive tissue changes due to hypoestrogenism. The urethra is of normal appearance and there is no gaping of the internal sphincter. Topical application of silver nitrate solution of 2 to 3 per cent through the Kelly cystoscope is of great value. As many of these patients are highly neurotic, mild sedation is of great value.

In the treatment of the group due to obstetric trauma, the most satisfactory results can be obtained. Of course, incontinence due to increase of intracystitic pressure resulting, for example, from pressure of a uterine fibroid or pregnant uterus would not be alleviated by an operation on the vesical neck. The same holds true if the dribbling is due to a cord lesion. The operative procedure commonly used with us is the one described by Dr. Howard A. Kelly in 1911. He states that "the key to successful treatment lies at the internal orifice of the urethra and in the sphincter muscle which controls the canal at this point." In brief, the operation that we perform is as follows: An incision is made through the vaginal mucosa, extending from just below the external urinary meatus down within 2 to 3 cm. of the external cervical os, the tissues first having been well infiltrated with salt solution containing 10 minims of epinephrine to the ounce. This infiltration, so commonly used on the continent, greatly facilitates the separation of planes of cleavage and also allays to a great measure venous oozing. Naturally, the resulting hemostasis is more pronounced in the menopausal patients, in whom tissue regression is the rule. The vaginal mucosa is separated from the bladder wall; then, with a little care, the pubocervical fascia can be well isolated. The bladder is advanced well up on the cervix. The next step is to suture the torn or relaxed tissues at the neck of the bladder with interrupted fine silk so as to buttress the vesical neck. The pubocervical

fascia is then brought together as a separate layer, following which any excess of anterior vaginal wall is excised and the wound closed. Many other operative procedures have been devised and are of great value in special cases when there is partial or complete destruction of the vesical neck. Today, with the great improvement in obstetrics, the incidence of vesicovaginal fistulas is of infrequent occurrence, the majority of destructive lesions of the ureter and bladder being due to operative accidents. Some time ago I saw an incontinent patient who had been operated on for an intraligamentous myoma. Immediately following operation no incontinence was noted; however, ten days later urine was noticed escaping from the vagina. The patient still continued to void normally. Careful cystoscopy and methylene blue injected into the bladder revealed no defect in this organ. Catheterization of the ureters demonstrated an obstruction in the left ureter at the brim of the pelvis, the right tract being normal. A urogram revealed periureteral extravasation of the opaque substance at the point of obstruction in the left ureter. With this finding it was obvious that the urine

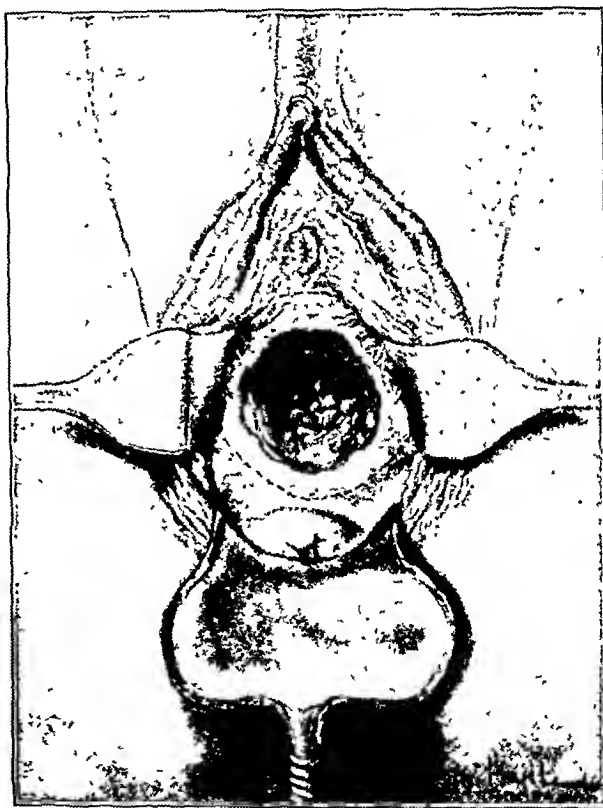


FIG. 8. Vesicovaginal fistula, showing position of incision.

escaped by way of a tract that united with the cervical canal. This was substantiated by giving the patient methylene blue by mouth and then plugging the cervical canal with gauze; the blue stain was found on the left side of the gauze. At operation a left hydronephrosis and hydroureter were found which necessitated nephrectomy.

The following procedure for the repair of very large vesicovaginal fistulas is simple and successful: A young colored primipara had a difficult, prolonged labor and ten days post partum became incontinent. On examination in the hospital a very large vesicovaginal fistula was seen (fig. 8), the base of the bladder was nearly

completely destroyed and the defect would admit three fingers. The surrounding tissues were in good condition, so that the operation could be carried out without delay. The ureters were catheterized and the ends of the catheters were brought out through the urethra and allowed to remain for ten days. As is seen in figure 9 a circular incision was made in the vaginal mucosa about the fistulous opening at a distance of about 2 cm. from the defect. This flap was partially undercut so that it remained attached at the edge of the fistula (fig. 10). These freed flaps of vaginal mucosa then turned back on themselves so as to cover the defect and then sutured vertically one to the other by an imbrication suture, so that the broad surfaces approximated one another. The floor of the bladder was thus lined by the mucosal surface of the vaginal mucosa. The denuded defect (fig. 11) was then united transversely with interrupted number 1 chromic catgut, this being the suture material used throughout the procedure.

The patient experienced an uneventful convalescence, with good union of the tissues, and there was no incontinence.

Another important factor to be considered is the role of adnexal and cervical infections as they pertain to lesions of the urinary system. Adnexal disease causes compression effects on the ureter, depending on the chronicity and resulting fibrosis and fixation of the tubo-ovarian mass. As would be expected with an acute

a study of 100 patients who showed varying gynecologic conditions found that dilatations of the upper tract were frequently associated with chronic salpingitis, subacute salpingitis with masses and pelvic abscesses. The incidence of percentages was 44.4, 58.3 and 57.2.

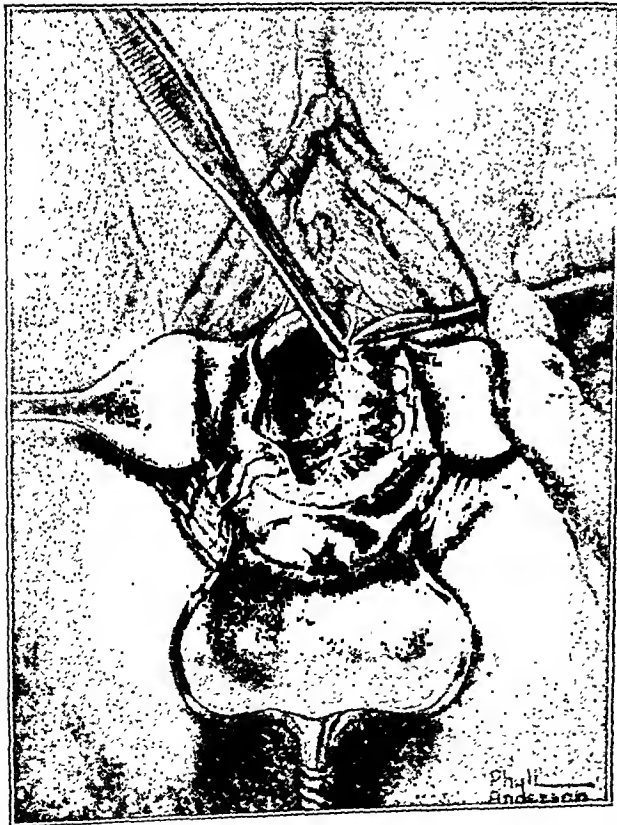


Fig. 9.—Undercut vaginal flap, remaining attached at edge of fistula, united by imbrication sutures.

inflammatory process of short duration, when the tissues are soft and succulent little effect would be exerted on the dense wall of the ureter. Everett and Sturgis,³ in

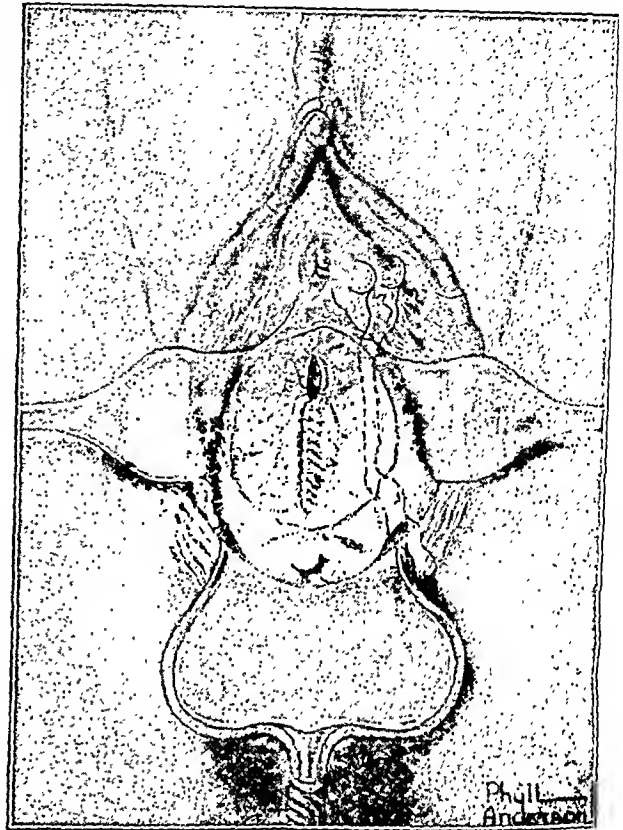


Fig. 10.—Closure of vaginal flap nearly completed in vertical line.

The work of Martin Schreiber⁴ on the subject of ureteral stricture, based on the findings in one hundred consecutive autopsies, is of particular interest. From this thorough and painstaking work we quote a partial summary of his conclusions, which are pertinent to this presentation:

1. Stricture of the ureter does exist as a definite pathological entity.
2. A 12 per cent postmortem incidence of stricture or stenosis corroborates the great number of such lesions found clinically.
3. Latent symptomless hydronephrosis due to obstruction are relatively frequent, as evidenced by a postmortem incidence of 10 per cent.
4. Ureteral stricture as a localized intrinsic inflammatory process in the ureteral wall, due to focal infection, is relatively rare.
5. Ureteral stricture or stenosis is found most frequently in the pelvic ureter in a zone 2 to 6 cm. from the ureteral orifice.
6. Important etiologic factors in the production of ureteral obstruction are due to narrowing of a congenitally constricted site, extension of inflammatory processes from adnexal disease with and without thrombophlebitis, advanced chronic cystitis and the occluding kinking power of crossing anatomical structures, namely the vas deferens in the male and the uterine artery in the female.

As we are all aware, the incidence of ureteral stricture varies tremendously with personal interpretation. Many

³ Everett, H. S., and Sturgis, W. J.: *Urol. & Cutan. Rev.* 44: 638, 1940.

⁴ Schreiber, M.: *Surg., Gynec. & Obst.* 45: 423, 1927.

support their diagnosis of stricture by the demonstration of the "hang" with the wax bulb, others relying more on the finding of dilatation effects as shown by urography. We feel that if a definite stricture exists there should be a resulting dilatation which is demonstrable by urography. However, the fact remains that many patients are relieved of their symptoms following ureteral dilatation even when the urogram showed no abnormality.

Knowing that a considerable difference of opinion exists as to the relationship of endocervicitis to trigonitis and cystitis, we reviewed the current literature and found a paucity of factual evidence on this subject. An experimental article of merit on the transmission of infection from the uterine cervix to the urinary tract has been presented by Winsbury-White.⁵ Some of his findings pertinent to this subject will be presented. He is of the opinion that cystitis and trigonitis are constant companions of cervicitis and that the bladder infection is difficult to eradicate if the cervical lesion is not also treated. Owing to this frequent association of lesions he raises the question as to the existence of a lymphatic connection between the uterine cervix and the trigone. In order to prove his opinion he carried out the following experiments: He injected india ink and living and dead tubercle bacilli into the tissues of the cervix in some animals, and into the urethra in others. His most conclusive results were found by using india ink injections in the cervix of the guinea pig. A summary of the results of experiment 5 is as follows: The guinea pig was killed four days after the injection of india ink. Masses of the pigment were found in the lymphatics of the bladder wall. When injections were made with living and dead tubercle bacilli, inflammatory reactions were found in the bladder wall as well as in the vaginal coats. He concludes that these findings demonstrate a lymphatic connection between the cervix and the bladder as well as between the cervix and the vagina, and "therefore we may expect, as we generally find in practice, that cervicitis is accompanied by cystitis and vaginitis." The remaining portion of the article deals with the upward lymphatic migration of the india ink and tubercle bacilli following their injection into the cervix.

Wishing to determine the relationship between endocervicitis and trigonitis and cystitis, we examined cystoscopically a group of 50 women who had varying degrees of endocervicitis. A summary of this study follows: In order to designate the degree of cervicitis present, the lesions were classified from 1 plus to 4 plus; accordingly, there were found 13 patients with a 1 plus lesion, 19 patients with a 2 plus lesion, 13 patients with a 3 plus lesion and 5 patients with a 4 plus lesion. The bladder symptoms complained of were nocturia ten times and dysuria ten times; in 32 patients there were no urinary complaints. The cystoscopic results are as follows: The bladder mucosa was found normal in 47 patients, whereas the remaining 3 showed a moderate hyperemia. A normal trigone was found in 34 patients, whereas 13 showed slight degrees of injection. One patient showed a bullous edema with 3 plus injection. This definite trigonitis was associated with an *Escherichia coli* communior infection of the urine, and there was an accompanying 4 plus endocervicitis. Two other patients showed similar degrees of trigonitis, and in both *E. coli* was the offending organism. In 1 of these

patients the degree of cervicitis was 3 plus and in the other only 2 plus. Mucosal tags were seen projecting into the lumen of the urethra at the internal orifice in 4 patients. The ureteral orifices were normal in 45 patients. A halo of injection was seen about both ureters in 2 patients, about the right ureter in 2 and about the left orifice in 1. Bladder cultures were obtained from all the patients except 4: negative cultures in 26, or 52 per cent, *Staphylococcus albus* in 8, or 16 per cent, *Staphylococcus aureus* in 2, or 4 per cent, *Staphylococcus fecalis* in 1, or 2 per cent, *Clostridium tetanoides* in 6, or 12 per cent, and *Escherichia coli* communior in 3, or 6 per cent. The cultural findings correspond quite closely to bacteriologic studies made on the bladder urines of the pregnant and nonpregnant women which we have previously reported.⁶ In that study we found that the incidence of all organisms in the bladder urine of the pregnant woman was high, namely 50 per cent. However, this finding lost much of its significance when we noted that the urine of the control nonpregnant

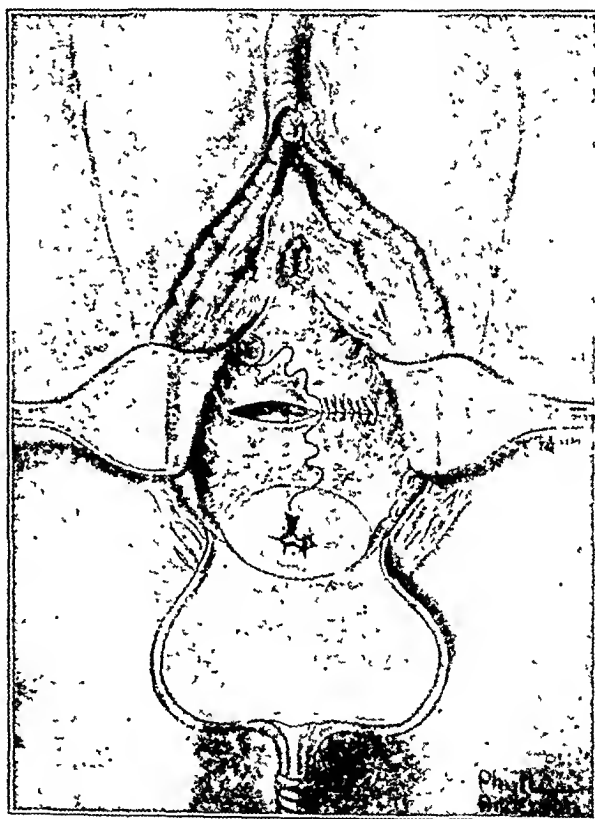


Fig 11—Closure of vaginal mucosa in horizontal plane

group showed 44 per cent positive cultures, this finding corresponding rather closely to the percentage here found, namely 48 per cent positive cultures. The types of organisms isolated in this study were the same as those found in the previous investigation, all normal inhabitants of the vestibule, and we feel that many of these positive cultures are due to the entrance of the organisms into the bladder through the short, rather patulous urethra.

From this study of the relationship between endocervicitis and cystitis and trigonitis we feel that we can draw the following conclusions: Endocervicitis plays

⁵ Winsbury White, H. P.: *Brit J Urol* 5: 249, 1933.

⁶ Hundley, J. M., Jr., and others. *Surg, Gynec & Obst* 66: 369, 1938.

no role as a causative factor in the production of cystitis, for the bladder was normal in 47, or 94 per cent, of the patients. It would seem that the same holds true for trigonitis, for here the trigone was quite normal in 34 patients. As is well known, trigonitis is of very frequent occurrence, often of short duration, and seen frequently with diseases of the urethra, relaxations due to childbirth, postmenopausal regressive changes and many other factors. The evaluation of the trigone as to the degree of hyperemia and whether the mild changes are abnormal is difficult. From this study we feel that there is no significant relationship between pathologic conditions of the cervix and of the bladder. If lymphatic migration of organisms from the cervix to the bladder is of such common occurrence as stated by Winsbury-White, why does not malignant involvement of the floor of the bladder occur more frequently from a carcinoma of the cervix? Carcinoma of the cervix metastasizes as a rule into the parametria, either by direct growth or by lymphatic spread, probably most often by both pathways. We routinely examine cystoscopically all patients with carcinoma of the cervix, and of 413 such patients examined we found bladder involvement in only 54, or an incidence of 13.1 per cent. It is unusual to see direct extension of the growth into the lumen of the bladder. The usual finding is a submucosal extension of the cervical lesion, producing a cobblestone or knobby appearance.

A somewhat unusual but most interesting invasive lesion of the bladder from a gynecologic focus is due to endometriosis, probably produced by the retrograde reflex of endometrial tissue through the oviducts at the time of menstruation. Not all are in accord with this transtubal theory, as presented by Sampson⁷ in his original article in 1921. The so-called celomic metaplasia theory is supported notably by Robert Meyer, whereas Halban believes that lymphatic dissemination is the pathway for dispersion of endometrial fragments. Some time ago such an interesting condition came under our observation. A young woman was operated on by the senior author for bilateral pyosalpinges; both tubes and one ovary had to be removed and, owing to the associated inflammatory changes in the adjacent tissues, the abdomen was drained for a short time. The patient had an uneventful recovery. Later she presented herself for observation, stating that for several months bleeding had occurred from the site of the drain tract in the abdominal wall, though only at the time of menstruation. Gradually a spherical, nodular mass was observed developing in this region, and the bleeding continued to appear from this area only at the menstrual time. A second operation was performed through the original scar, and the nodular mass was found filled with many mulberry-like cysts containing bloody fluid. When the abdomen was opened the pelvic peritoneum was studded with these same small cysts and in the wall of the bladder, at its base, a large nodule similar to that found in the abdominal wall was observed. Unfortunately a cystoscopy had not been performed, but it was definite that an endometrial invasion of the bladder was present. Two methods of treatment presented themselves, either a resection of the bladder, which would have been extensive and difficult, or the removal of the remaining ovary. It is well known that ovarian activity is necessary for

the maintenance and development of these endometrial masses, and with its absence the lesions undergo prompt regression. The remaining ovary was then removed. The endometrial mass in the abdominal scar was excised so as to facilitate a better closure. The patient had an uneventful convalescence, and when later seen the nodular mass in the base of the bladder had disappeared. Unfortunately the patient refused cystoscopy; however, there was no doubt that complete regression had taken place. If this had not been the case, a cycle of high voltage x-ray therapy would have hastened its disappearance, for it is known that this lesion is sensitive to radiation. Occasionally patients with this bladder involvement give a history of intermittent hematuria, but here this was not the case. Microscopic examination of the cystic material confirmed the operative diagnosis.

There are many other conditions that probably could be discussed profitably, but a comprehensive presentation would be far too voluminous for present consideration.

COMMENT

One of the most important factors in the production of urinary tract changes is due to pressure exerted by pathologic processes arising in the female pelvis. We have given a brief summary of our previous findings on the physiologic and pathologic changes in the urinary tract during pregnancy and also have shown what effects estrogens and progestogens exert on ureteral activity. This review is of value, for the lessons here learned are of a fundamental nature and make easily understandable changes produced by pathologic factors. Quite similar dilatation changes in the urinary tract occur in the presence of large pelvic tumors; however, we do not see the hormonal manifestations described as occurring in pregnancy. The dilatations may arise at the pelvic brim or in the pelvic bowl.

The second factor discussed was pathology of the urinary tract as a result of parturition. Here were considered relaxations of the pelvic floor, with special reference to the cystocele and the frequently associated cystitis. It was also shown that uterine prolapse may be an etiologic factor in the production of dilatation of the ureter. A method for the repair of large vesicovaginal fistulas has been presented, in which the surrounding vaginal mucosa was used to cover the defect. Stress incontinence is of frequent occurrence. It is seen in the postmenopausal woman with regressive changes occurring in the bladder and trigone due to absence of estrogenic stimulation. Trigonitis is frequently associated with these regressive changes and is usually alleviated by the topical application of silver nitrate solution 2 to 3 per cent through the Kelly cystoscope. Stress incontinence is also seen as a result of obstetric trauma when there is an associated relaxation and stretching of the fascial supports. The operation devised by Howard A. Kelly is of distinct value, and its success is dependent on the proper buttressing of the vesical neck. Fistulas are of infrequent occurrence, the greatest number resulting from operative accidents and from irradiation of cervical carcinoma. With us, vesicovaginal fistulas due to childbirth are rarely seen.

We next discussed pelvic infections as they influence the urinary system. There is no doubt that chronic disease of the adnexa with or without masses causes pressure on the ureter and by inflammatory invasion produces stricture of the ureter. The work of Schreiber on ureteral stricture showed that adnexal disease was

7. Sampson, J. A.: Perforating Hemorrhagic (Chocolate) Cysts of Ovary. Their Importance and Especially Their Relation to Pelvic Adenomas of Endometrial Type, *Arch. Surg.* 3: 245 (Sept.) 1921.

one of the most frequent etiologic factors in its production. Wishing to determine what role cervical infections played in the production of bladder disease, we selected 50 women with varying degrees of endocervicitis, the majority having no urinary complaints. Cystoscopy was carried out, and from the accumulated data we are of the opinion that endocervicitis plays a very unimportant role in the production of bladder infections. If lymphatic migration is of such common occurrence, why does not carcinoma of the cervix metastasize more frequently to the bladder? Cystoscopy of 413 patients with carcinoma of the cervix disclosed bladder involvement in only 54, or an incidence of 13.1 per cent.

An interesting invasive lesion of the bladder from a gynecologic focus has been reviewed, namely endometriosis. This lesion is of common occurrence, and when hematuria occurs at the time of menstruation a diagnosis can be readily made. The development and maintenance of this ectopic endometrium is dependent on ovarian activity. When there is widespread involvement of the intestine, rectovaginal septum or bladder, oophorectomy may be the procedure of choice, thus avoiding a difficult and often hazardous operation.

101 West Read Street.

ABSTRACT OF DISCUSSION

DR. NELSE F. OCKERBLAD, Kansas City, Mo.: Jenkins at Yale, whose work on monkeys proved that the endocrine theory is correct, has made a contribution that will live as a starting point of the explanation of pyelonephritis of pregnancy. One point that I would like to stress is the real danger of the indwelling ureteral catheter. I had 2 patients that wore indwelling catheters for periods of five to seven weeks. One of these patients one night suddenly started to bleed into the bladder. Before anything could be discovered or done about it the patient died. The autopsy showed that there was a communication between the right ureter and the right common iliac artery. Just about three weeks later a similar case occurred. The nurse on the floor said "This is just like the first one." The patient was brought to the operating room and the incision was made, exposing the area; a communication between the right common iliac artery and the ureter was found and the artery was closed by suture, the ureter was closed and the patient's life was saved, showing that an observant nurse can be of great help. A woman aged 32 was referred to me recently by a gynecologist because of an obstruction to the urethra. There was a large mass between the bladder and the floor of the bladder and the anterior vaginal wall. This proved to be a large cyst, one of those remnants of the duct of Gartner. It was dissected out and found to contain about 300 cc. of clear fluid. Diverticulosis of the urethra is a disorder that urologists are constantly seeing. I have seen 7 cases of diverticulum of the urethra, in 1 of which was a papillary carcinoma causing complete obstruction of the urethra. This patient, however, died of another disease and the specimen obtained was unique. Many of us doing urology also repair vesicovaginal fistulas. Here is a case in which a woman had a bladder that was torn wide open from the cervix clear out through the urethra. She had no urethra. I repaired the fistula and got her down to a little tiny opening which served as a urethra. She didn't leak any at night, but in the daytime she leaked some, so I wanted to go ahead and finish the operation and make her a urethra. While I was thinking about how to go about it she came back and said she wasn't going to have another operation for she had solved the problem. I asked her how she had done it. "Well," she said, "I went to the ten cent store and got a rubber ball just the right size and inserted it in my vagina." It pressed right against the symphysis and acted as a valve and kept her dry and she said she'd have no further operation and the situation was perfect.

DR. VINCENT J. O'CONNOR, Chicago: We have all seen the changes in the female urinary tract which accompany pregnancy and the presence of large pelvic tumors. Those who are interested in these changes which accompany pregnancy are in general agreement that they are due to a combination of hormonal influences with the added mechanical pressure on the ureters exerted by the gravid uterus. We are frequently confronted with the problem of "stress incontinence" in women. The majority of these patients have a definite relaxation of the pelvic floor with incompetent vesical sphincters. In most instances this condition has been preceded by multiple pregnancies. The cause and treatment of this condition are self evident. We are frequently consulted by women who have never been pregnant, who are in the late forties or fifties and who have pronounced stress incontinence but who have no decided relaxation of the pelvic floor. Urethroscopy and cystoscopy show no definite evidence of an irritative factor or relaxed sphincter condition which might account for the symptoms. We must first rule out any associated urinary tract infection, chronic interstitial type of bladder neck infection or any cause of urethral or sphincter irritability with loss of muscle tone. The possibility of neurogenic disease which accounts for a certain percentage of these instances and the exact nature of the underlying lesion may be easily overlooked without a careful neurologic examination. In many of these patients I have insisted on a procedure comparable to the Kelly sphincter reefing operation and in practically every instance the normal bladder continence was restored. A problem which frequently arises in urology is that due to the late radiation effects on the bladder and ureters in women who have been irradiated for various pelvic lesions. These changes vary from sclerotic lesions of the bladder resulting in an interstitial cystitis to strictures of the ureter and granulomatous lesions of the bladder wall, which often give the appearance of primary neoplasms. These irradiation effects may be late in their inception for from one to ten years. They are apparently due to gradual blood vessel contracture with the resultant granulomatous lesions. All patients who have had pelvic irradiation and who subsequently develop urinary dysfunction should be carefully studied from the urologic point of view. I not infrequently have seen patients when I was definitely sure that endometrial invasion of either the lower end of the ureter or of the bladder was present. However, in most of these patients and following castration or irradiation the lesions have disappeared and while there has been strong presumptive evidence of the endometrial urinary invasion I have not been able to prove it.

DR. J. M. HUNDLEY JR., Baltimore: It is unwise to leave the catheter in the ureter longer than forty-eight hours during the later weeks of gestation, for its presence tends to precipitate the onset of labor. We too find stress incontinence a troublesome problem. As a rule we find that this condition exists in women past the menopause and in those who have had trauma from childbirth. With the menopausal group the urethral tube is normal, as is the vesical neck, and frequently the only pathologic condition noted is that of trigonitis. The treatment of this condition in this group of patients consists in sedation, as frequently the patients are of a highly nervous type, and then bladder instillation of silver nitrate solution 1:1,000 biweekly. If the instillations do not give relief, topical application of silver nitrate 1 to 3 per cent is made directly to the trigone through the Kelly cystoscope. We have never operated on a patient in this group, feeling that operation is contraindicated. Cure of the patient with stress incontinence due to lacerations resulting from childbirth is as rule comparatively easy, for the difficulty here is at the vesical neck. The procedure we carry out is one devised by the late Dr. Howard A. Kelly, which consists in buttressing and supporting the tissues about the internal urinary meatus. With this procedure the repair of a frequently associated cystocele is carried out and as a rule excellent results are obtained. There are many intricate operations advised for the cure of stress incontinence, particularly when there is definite relaxation at the internal urinary meatus. However, as a rule simple plicating and buttressing of the tissues suffice.

PRECOCIOUS SKELETAL DEVELOPMENT

ROGER L. J. KENNEDY, M.D.
ROCHESTER, MINN.

In clinical pediatrics, estimation of the degree of skeletal development is frequently carried out by comparing the roentgenogram of a portion of the skeleton with one of a similar portion of the skeleton of an average or normal child of the same age. In actual practice the number of the bones of the wrist and hand and their degree of development are most widely used for such comparison.

It is recognized that well known standards such as those of Todd,¹ Flory,² and Engel and Runge³ must be used with allowances for variations within the norm. Although such standards may be unsuitable for strict investigational purposes they may be used to determine whether skeletal development is grossly retarded, normal or grossly advanced. This report is not concerned with minor variations from the normal or average.

Some conditions, notably cretinism, are known to be accompanied by retarded skeletal development. A good deal has been written about such retarded development. Although it has been the subject of extensive study, precocious skeletal development or early maturation has been less emphasized than has retarded development.

The results of experimental work in this field on animals can be interpreted as only suggestive when applied to conditions in the human subject.

The clinical histories of a series of children with precocious skeletal development who have been observed during the past few years have been reviewed to determine (1) in what conditions precocious skeletal development occurs and (2) the factors which may be responsible for skeletal precocity.

In respect to the factors which may be responsible for the skeletal precocity, data concerning the probable role of endocrine disturbances are incomplete. In some cases the amounts of 17-ketosteroids excreted in the urine were determined. In other cases such determinations were not considered essential to diagnosis or treatment and hence were not made.

The histories of 23 patients were reviewed. The patients may be divided into four groups. The first group includes 3 patients with proved adrenal cortical tumor (table 1). In 1 of these 3 cases in which the excretion of 17-ketosteroids was studied before operation, the excretion was 170 mg. in twenty-four hours, a value far in excess of normal. It is pertinent at this point to repeat some of the facts regarding the 17-ketosteroids which have been emphasized by Talbot and his associates⁴ and by Engstrom, Mason and Kepler:⁵ that the 17-ketosteroids which have their source in the adrenal glands and testes of males and in

the adrenal glands of females are not all androgens. Conversely, androgens are not all 17-ketosteroids. The determination of the excretion of 17-ketosteroids, however, usually gives a rough index of androgenic activity. Other patients not included in this series had proved adrenal cortical disease but did not show precocious skeletal development.

The second group (table 2) includes 12 cases in which hyperplasia of the adrenal glands was either proved or, because of the clinical and laboratory evi-

TABLE 1—*Proved Disease of Adrenal Glands (Cortical Tumor)*

Case	Sex	Age, Yrs.	Bone Age, Yrs.	17-Ketosteroids, Mg. Excreted in Urine in 24 Hrs.	Diagnosis	
					Clinical	Pathologic
1	♀	1 11/12	6	...	Adrenal cortical syndrome	Adrenal cortical tumor
2	♀	9	15	...	Adrenal cortical syndrome	Adrenal cortical tumor
3	♀	3 3/4	3 1/2	170	Adrenal cortical syndrome	Adrenal cortical tumor

TABLE 2—*Adrenal Disease (Hyperplasia) Proved and Possible*

Case	Sex	Age, Yrs.	Bone Age, Yrs.	17-Ketosteroids, Mg. Excreted in Urine in 24 Hrs.	Diagnosis	
					Clinical	Pathologic
4	♀	3	8	50 52	Sexual and somatic precocity; anomaly of genitalia	Adrenal hyperplasia
5	♂	4	14-16	87 84	Sexual and somatic precocity	Adrenal hyperplasia
6	♀	4	7	10.8, 12.2, 14.2, 12.3, 6.8, 12.5	Sexual and somatic precocity	Adrenal hyperplasia; anomaly of genitalia
7	♂	9	10-13	21.2	Sexual and somatic precocity	Adrenal hyperplasia
8	♀	12	27	...	Sexual and somatic precocity; hypertrophy of clitoris; hirsutism; male habitus	
9	♀	1	2	0.5	Hypertrophied clitoris; hirsutism; acne	Chromic epitheliophoritis
10	♀	2 1/2	7	...	Precocious puberty; mental retardation	
11	♀	11	18-19	..	Acne; precocious development	
12	♀	4 1/2	5-6	1.2	Hirsutism; hypertrophy of clitoris; mental retardation	
13	♀	2	4		Mental retardation	
14	♂	2 1/4	4		Cerebral cortical atrophy	
15	♀	4	6 1/4		Physical and mental precocity	

dence, was thought to be present. Five of the patients exhibited sexual and somatic precocity. One of the 5 had anomalous external genitalia and 1 was a pseudohermaphrodite with hypertrophy of the clitoris, hirsutism and masculine habitus. In 4 of the 5 cases, excretion of 17-ketosteroids was found to be greatly increased. Among the remaining 7 patients in this group, 1 had hypertrophy of the clitoris, hirsutism and acne; 1 showed precocious puberty and mental retardation; 1 had hypertrophy of the clitoris, hirsutism and

1 From the Section on Pediatrics, Mayo Clinic.
Read before the Section on Pediatrics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.
2 Todd, T. W., and others. Atlas of Skeletal Maturation, St. Louis, C. V. Mosby Company, 1937.
3 Flory, C. D. Physical Growth of Mentally Deficient Boys, Monograph, Society for Research in Child Development, 1936, vol. 1, no. 6, p. 141.
4 Engel, S., and Runge, E. Standards for Normal Development of Hand, *Ztschr. f. Kinderh.* 33: 61-64 (July) 1922.
5 Talbot, N. B.; Butler, A. M.; Berman, R. A.; Rodriguez, P. M., and MacLachlan, E. A. Excretion of 17-Keto Steroids by Normal and by Abnormal Children, *Am. J. Dis. Child.* 68: 364-375 (March) 1943.
6 Engstrom, W. W.; Mason, H. L., and Kepler, E. J. Excretion of Neutral 17-Ketosteroids in Adrenal Cortical Tumor and Feminine Pseudohermaphroditism with Adrenal Cortical Hyperplasia, *J. Clin. Endocrinol.* 4: 152-155 (April) 1944.

mental retardation; 1 had acne and precocious puberty; 1 showed somatic and mental precocity without sexual precocity; 1 had cerebral cortical atrophy with mental retardation, and 1 showed only mental retardation.

The third group (table 3) consists of 3 patients who had been treated with endocrine preparations. Two

TABLE 3.—*Precocious Bony Development Possibly Induced by Medication*

Case	Sex	Age, Yrs.	Bone Age, Yrs.	Clinical Diagnosis
16	♀	2½	6	Mongolian idiot; treated for 2 years with desiccated thyroid glands
17	♂	4	6	Mongolian idiot; treated with glandular products for 3 years
18	♀	9	14	Thrombocytopenic purpura; treated with testosterone propionate

were mongolian idiots. One of these 2 patients had been treated for three years with desiccated thyroid glands and 1 had received a variety of endocrine products for three years. The third patient in this group had thrombocytopenic purpura and had been treated with testosterone propionate. She showed unmistakable evidence of precocious skeletal development. Although evidence in support of the idea that the advanced skeletal development was a result of endocrine therapy is lacking, the condition of the skeleton in these cases indicates what may result from such medication. The basis for the employment of androgenic substances in the treatment of slipped epiphysis of the head of the femur is indicated by the findings in the third case just mentioned.

The fourth group (table 4) included 5 patients with miscellaneous disorders. One was a child aged 10 months who was brought to the Mayo Clinic because of vomiting and diarrhea. An incidental finding was the presence of bony development that would be normal for a child 2 to 3 years of age. The second patient was a girl who was obese and of large stature. The third was a boy 2 years of age who was brought to the clinic because of anomalies of the eyes. His bony development was approximately that of a child 6 years

TABLE 4.—*Miscellaneous Conditions Without Apparent Adrenal Cortical Disease*

Case	Sex	Age, Yrs.	17-Ketosteroids, Bone Age, Yrs.	17-Ketosteroids, Mg. Excreted in Urine in 24 Hrs.	Clinical Diagnosis
19	♀	5½	2-3	....	Vomiting and diarrhea
20	♀	9	10½	....	Obesity; large girl
21	♂	2	6	....	Anomaly of eyes
22	♀	9½	20	....	Hemangioma of left orbit and cheek; repeated treatment with radium
23	♀	6	13	1.55	Albright's syndrome

of age. The fourth patient had a hemangioma of the left orbit and cheek. Radium had been applied repeatedly to the affected parts. The last patient in this group was a girl aged 6 years who had the characteristic features of Albright's syndrome, namely sexual and somatic precocity, pigmented regions in the skin and cystic changes in the bones. Although the patient was only 6 years of age her skeletal development was that of a child of 13 years.

In surveying the entire series of cases, certain facts become evident. The first of these is that precocious skeletal development is not a peculiarity of any single clinical syndrome. Although it was found in some cases of adrenal cortical disease with increased excretion of 17-ketosteroids, in other cases of the same condition I have found that skeletal development is within normal limits. The variety of conditions represented in the four groups of cases indicates that precocious skeletal development may be found with or without obvious endocrine disorders and that it may follow administration of endocrine preparations.

One may conclude from the foregoing evidence that known factors such as the androgens may exert effects on the skeleton which lead to precocious development or premature maturation but that such effects are not inevitable in all cases in which their excretion in the urine is increased above normal. Furthermore, it is reasonable to conclude that another factor or other factors may operate together with, or independently of, the androgens to account for skeletal precocity.

ABSTRACT OF DISCUSSION

DR. JOHN R. VONACHEN, Peoria, Ill.: I sometimes wonder if there is really such a person as a normal child, that is, one who conforms to a standard or regular form. Even the healthiest of children cannot be expected to conform to any one given type. Papers like this call attention to variations in growth and development and, of course, this contributes a great deal to the understanding of both sick and healthy children. Because of the differentiation between health and disease we must have at our disposal an understanding of what variations from the average are consistent with health and which point to the presence of disease. Routine physical examinations offer little chance for any detailed estimation of bone development. Generally measurements give only an approximate estimation of total growth. In doubtful cases, of course, we must resort to the roentgenogram. In the laboratory much work has been carried out concerning the roentgenologic estimation of healthy growth and development of bones. The fact that various centers of ossification appear at different ages beginning before birth and continuing to the age of 25 affords an ideal means for checking the progress of growth and development of the skeleton. At the same time we have the opportunity of studying the deleterious effects of previous disease processes of different age periods. I think that Dr. Kennedy has shown that there is no common denominator in this group. Evidently precocious skeletal development as far as is known is not due to a specific factor any more than retarded skeletal development is. However, the x-ray examination of carpal bones may be a practical help in clinical work, in that the absence of skeletal precocity may come with the presence of certain underlying conditions.

Number of Hospitals in New Zealand.—In accordance with the provisions of the Social Security Act, New Zealand is divided into forty-five hospital districts. In each district a board is elected which provides certain types of institutional and extra-institutional medical and nursing service. Under the jurisdiction of each board there is at least one public hospital. These hospitals vary in size and the nature of the facilities afforded according to the density and composition of the population served. There are approximately 160 public hospitals, with a combined capacity of approximately 12,200 beds. Included in this number are the general hospitals, hospitals for the treatment of infectious diseases, tuberculosis institutes, homes for convalescents, charitable institutions, and homes for the aged. In addition to these public hospitals there are 332 private hospitals with a combined capacity of approximately 3,000 beds. On the basis of these figures it is estimated that there are 97 beds per 10,000 of population, which figure is identical with the number of beds available in the United States.—Simmons, James S.: *Global Epidemiology*, Philadelphia, J. P. Lippincott Company, 1944.

PENICILLIN IN THE TREATMENT OF INFANTILE CONGENITAL SYPHILIS

A BRIEF PRELIMINARY NOTE

R. V. PLATOU, M.D.
ALLEN J. HILL, M.D.
NEW ORLEANS
NORMAN R. INGRAHAM, M.D.
PHILADELPHIA
MARY S. GOODWIN, M.D.
BALTIMORE
ERLE E. WILKINSON, M.D.
AND
ARILD E. HANSEN, M.D.
GALVESTON, TEXAS

This is a brief preliminary note, as of Nov. 7, 1944, concerning 69 infants with manifest early congenital syphilis who have been treated with sodium penicillin by the university groups at Baltimore, Philadelphia, Galveston and New Orleans. Penicillin was administered intramuscularly in saline solution every three hours in sixty injections over a seven and one-half day period. Total dosages used ranged from 16,000 to 32,000 Oxford units per kilogram of body weight. No other antisyphilitic treatment was given.

Preliminary Results of Penicillin Therapy in Infantile Congenital Syphilis

Thirty-Nine Infants Followed for Four to Twelve Months

	Cases	Per Cent
Clinical results:		
Course uneventful	37	
Clinical relapse..	2	
Serologic results:		
Reversed to negative..	21	54
Reversed to doubtful....	4	10
Still positive but titer declining.	9	23
Serologic relapse..	5	13

In 34 of these 69 infants reactions occurred during treatment. Nearly all of these reactions were mild, consisting of moderate fever beginning on the first or second day of treatment and seldom lasting longer than three days. One infant, forty-eight hours after treatment was begun, suddenly developed severe, nearly fatal collapse. Three infants died during or soon after treatment (twenty-four hours, seven days and nine days after penicillin was started); all of these had active syphilitic lesions, were under 2 months of age and were in poor general condition. Two other infants died five weeks and fourteen weeks after penicillin; whether the latter deaths were directly or indirectly due to penicillin or syphilis is not known.

In general, the immediate response of early congenital syphilis to penicillin has been gratifying. Cutaneous and mucous membrane lesions have healed during or shortly after treatment; rhinitis has been somewhat more persistent, healing in from two weeks to two months. All dark field positive lesions have become negative within twenty-four hours after the start of penicillin therapy. Roentgenographic evidence of osteitis disappeared in two to six months, i. e. at about the same rate expected after metal chemotherapy. Regression of hepatic, splenic and lymph node enlargement, though

This report represents work done under several contracts recommended by the Committee on Medical Research of the Office of Scientific Research and Development and the respective universities represented by the authors.

From the Tulane University School of Medicine (Drs. Platou and Hill), the University of Pennsylvania School of Medicine (Dr. Ingraham), the Johns Hopkins University School of Medicine (Dr. Goodwin) and the University of Texas School of Medicine (Drs. Wilkinson and Hansen).

variable, was usually complete by three months. If abnormal spinal fluid findings were present initially, these have returned to normal in all cases in from eight days to six months.

Of the 69 infants, 39 have been followed from four to twelve months. Twenty-five of these 39 now are physically normal and show doubtful or negative serologic tests (21 negative, 4 doubtful). In 9 of these 39, quantitative serologic titers are either stationary at moderately high levels or slowly declining; these infants also are well. Serologic relapse has occurred in 5 infants, and clinical relapse in 2 of these 5. Serologic relapse occurred from three to six months after treatment, and clinical relapse in each case at six months.

The dosage schedules so far employed have corresponded to a total dose of 1 to 2 million units in seven and one-half days for an adult with early acquired syphilis.

The results so far obtained in infants indicate that the present total dose and time-dose relationship schedule is not entirely satisfactory. Other modifications of this schedule should be studied with due attention to analogous results secured by various schedules in early acquired syphilis in adults. For the present, we believe that an increase in total dose with the same time-dose relationship should be tried first. Accordingly, we recommend temporarily a total dose of 40,000 Oxford units per kilogram of body weight, given in sixty intramuscular injections over a seven and one-half day period.

Attention is called to the vital necessity of adequate supportive care of acutely ill infants.

Definite relapse, serologic or clinical, should be retreated at double the original dosage. A relapse is defined as either a persistently rising serologic titer or clinical evidence of progression of the disease. Persistent positivity of the blood serologic test alone is not yet to be considered an indication in itself for retreatment. A detailed report of these and additional cases will be made by this group at a later date.

SUMMARY

Penicillin is an effective agent in the treatment of infantile congenital syphilis, but the optimum method of its use has not yet been defined.

Clinical Notes, Suggestions and New Instruments

THE MESTER (SALICYLIC ACID) TEST FOR RHEUMATIC DISEASES

JAMES W. WOODS JR., M.D., AND BERNARD I. COMROE, M.D.,
Resident in Medicine and Chief of Arthritis Clinic, respectively,
Hospital of the University of Pennsylvania
PHILADELPHIA

There is no reaction which one may apply to rheumatic subjects comparable to the tuberculin or Wassermann reactions. If such a test could be found, it might help in eliminating many of the pitfalls and difficulties in the differential diagnosis of the rheumatic diseases.

Mester described a test which he believed had a high specificity for "rheumatism." This consists in the injection of 1.0 cc. of 0.1 per cent salicylic acid in sterile water in five wheals of 0.2 cc. each into the flexor surface of the forearm in a fasting, resting subject. The latter precautions were taken because any change of posture or physiologic activity may produce a rise in the basal count of 60 to 100 per cent.¹

J. Pepper, O. H. P., and Farley, D. F.: Practical Hematological Diagnosis, Philadelphia, W. B. Saunders Company, 1933.

The white blood cell count is determined prior to the injection and thirty minutes later. A positive test—i. e. denoting rheumatic infection—consists of a decrease of more than 15 per cent in the white blood cell count at the end of thirty minutes.

Mester believed that the reaction was positive in every kind of rheumatic infection not only of the joints but also of the heart, serous membranes, nerves and eyes. He found a positive reaction in 98 per cent of rheumatic patients, while all of his controls were said to give negative results. He thought that the test would be of value in the detection of malingering in rheumatic disorders.²

Lenoch³ concluded that the test was a probable addition to our method of diagnosis of rheumatic diseases but found that it was far from infallible. The test was negative in degenerative joint disease. Lenocho warned against making a diagnosis of rheumatic joint pains or myalgia solely with the aid of this test.

Copeman⁴ and Green and Freyberg⁵ could not confirm Mester's findings and did not find that the test helped in the diagnosis of rheumatic diseases. They noted negative reactions in frank rheumatic disease and positive reactions in nonrheumatic conditions. Only 1 of Copeman's patients had rheumatoid arthritis, although 13 had acute rheumatic fever.

We attempted to evaluate the reliability of the Mester test in active rheumatic fever, in active rheumatoid arthritis and in nonrheumatic controls. These individuals all had increased sedimentation rates, and 7 of the group of 9 patients with rheumatic fever were febrile at the time of the test while 5 of the 16 patients with rheumatoid arthritis had an elevation of temperature. The control group of 20 patients was taken from the medical wards; 4 of these individuals had increased sedimentation rates and 6 were febrile.

Only 2 of the patients with rheumatic fever showed significant drops of more than 15 per cent in the leukocyte count; 2 showed increases of more than 25 per cent and the remainder presented little variation. In the group with rheumatoid arthritis, 5 showed a drop in leukocytes of 15 per cent or more and 5 showed a rise of 15 per cent or more. In the control group 2 showed a significant decrease and 3 showed a significant increase in the leukocyte count thirty minutes after the test. It was found that there were no significant differences among the three groups (rheumatic fever, rheumatoid or control patients) either with or without consideration of the direction of change of the leukocyte count.

It was concluded that the Mester test for rheumatic diseases is wholly unreliable as an aid in diagnosis or differential diagnosis.

PURULENT PERICARDIAL EFFUSION TREATED WITH PENICILLIN GIVEN INTRAPERICARDIALLY

A. W. WISE, M.D., ROCK ISLAND, ILL., AND
L. E. SHAFER, M.D., DAVENPORT, IOWA

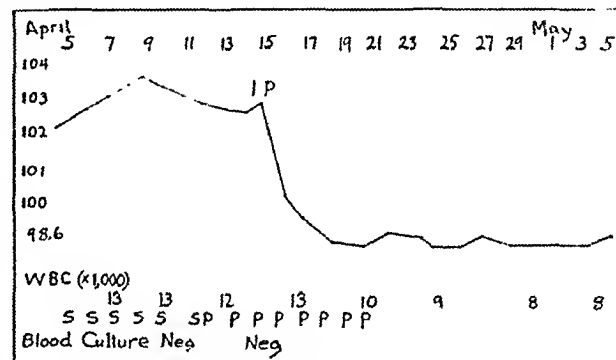
M. O. M., a white woman aged 31, was admitted to St. Luke's Hospital on April 5, 1944 with a story of fever, cough, dyspnea, chest pain, palpitation and slight hemoptysis of about four days' duration. The patient had been treated at home during this time, with a diagnosis of lobar pneumonia. She was acutely ill and apparently getting progressively worse.

The physical examination revealed that the breath sounds in the left lower chest were high pitched and tubular in character. Whispered voice and spoken voice were both greatly increased over the same area. The percussion note was dull over the entire left lower lung field. The heart tones were very faint in character and were scarcely audible even though the patient was very thin. Tension was 108/70. The heart was enlarged to the midaxillary line on the left and 3 cm.

beyond the sternum on the right. A tentative diagnosis of left lower lobar pneumonia with associated pericardial effusion was made.

The x-ray examination showed definite consolidation in the left lower lobe. The heart was greatly enlarged to the left and to the right and appeared to be typical of pericardial effusion. The laboratory examination showed 13,650 white blood cells and 4,600,000 red blood cells. Hemoglobin was 11.5 Gm., with a differential of 80 per cent neutrophils and 20 per cent lymphocytes. The urinalysis showed a trace of albumin, with no other abnormalities. Blood was drawn at this time for a culture, which was subsequently negative. Sputum could not be typed, possibly because sulfadiazine had been given for four days before entrance to the hospital, but numerous pneumococci were seen. The treatment consisted of fairly large doses of sulfadiazine, which had also been given before the patient's entrance to the hospital. She was maintained on 1 Gm. of the drug every four hours for five days. Her condition became progressively worse, and dyspnea became extreme. Oxygen was given by B. L. B. mask and the patient was fully digitalized. All through this period her blood pressure was maintained fairly well, and it was thought inadvisable to do a pericardial paracentesis. The temperatures were fairly steady in the neighborhood of 103 to 104 F.

At this time we were fortunate enough to obtain a supply of penicillin for use on this patient. It was started intramuscularly and 15,000 Oxford units was given every three



Clinical course. S, sulfadiazine; P, penicillin; IP, intrapericardial penicillin.

hours, night and day. The sulfadiazine was discontinued at this time, and after three days of penicillin the condition of the patient had not changed very much. It was then decided to give at least one dose of penicillin intrapericardially. A pericardial paracentesis was done and about 70 cc. of turbid, definitely cloudy, blood tinged fluid was removed from the pericardial sac at that time. Then 40,000 Oxford units of penicillin in about 30 cc. of isotonic solution of sodium chloride was introduced directly into the pericardial cavity. The patient suffered no ill effects from this procedure, and within sixteen hours after this time the temperature dropped to normal and, with the exception of an occasional flare up, remained normal for the duration of her illness. Penicillin was continued intramuscularly in decreasing doses for four to five days. The pericardial fluid was inadvertently disposed of in its course through the hospital to the laboratory, and thus one must be forced to rely on our clinical judgment to say whether or not pneumococci could have been grown from it. However, it was definitely a purulent fluid and was removed from a pericardial effusion secondary to a lobar pneumonia. The patient's hospital course was uneventful for the remainder of her stay, and she was dismissed as cured on May 9, her thirty-fourth hospital day.

In our minds this case definitely represents a purulent pericardial effusion, secondary to a lobar pneumonia, which failed to respond to sulfadiazine or intramuscular doses of penicillin but which responded in dramatic fashion to penicillin when given intrapericardially.

502 Safety Building, Rock Island, Ill.

2. Mester, A.: Polska gaz. lek. 11: 388, 1932; 12: 915, 1933; Acta balneol. polon. 11: 1938; Ann. Rheumat. Dis. 2: 266, 1941.
3. Lenocho: Wien. Klin. Wchnsch. 51: 363, 1938.
4. Copeman, W. S. C., and Stewart, W.: Ann. Rheumat. Dis. 3: 107, 1942.
5. Green, M. E., and Freyberg, R. H.: J. Lab. & Clin. Med. 27: 81, 1941.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

The Council has authorized publication of the following report by Dr. Harry E. Morton and Mr. Frank B. Engley Jr.

AUSTIN SMITH, M.D., Secretary.

DYSENTERY BACTERIOPHAGE

REVIEW OF THE LITERATURE ON ITS PROPHYLACTIC AND THERAPEUTIC USES IN MAN AND IN EXPERIMENTAL INFECTIONS IN ANIMALS

HARRY E. MORTON, Sc.D.

AND

FRANK B. ENGLEY JR., M.S.

PHILADELPHIA

Within the last ten years two reports on the nature and use of bacteriophage have appeared in *THE JOURNAL*. The first review was by Eaton and Bayne-Jones¹ and the second by Krueger and Scribner.² Both of these reports covered all bacteriophages which had been used therapeutically. There may be a fallacy in drawing conclusions from the action of one bacteriophage and attempting to predict the behavior of bacteriophages in general. Some of the conclusions arrived at by Krueger and Scribner did not appear to apply to dysentery phages and so we have found it necessary to review the literature on the use of dysentery phage. This review, along with work reported since the previous reviews, presents dysentery phage in an aspect different from the impression gained from the two previous reviews.

REVIEW OF THE LITERATURE ON THE THERAPEUTIC USE OF DYSENTERY BACTERIOPHAGE

In order to evaluate the effectiveness of dysentery bacteriophage, or any other agent, in the treatment of bacillary dysentery it is necessary to demonstrate dysentery bacilli, the causative micro-organisms, in every patient studied. Moreover, it is important to determine whether or not the preparation of dysentery bacteriophage to be used therapeutically is active against the dysentery bacilli isolated from the patient. This can be done conveniently in vitro. There are differences between strains of bacteriophages as there are between different strains of bacteria. If one preparation or strain of dysentery bacteriophage does not act against a particular culture of dysentery bacilli, other strains or preparations from different sources may do so. An outstanding feature of bacillary dysentery in man is that the mortality is not very great, so, as Seidmayer³ has pointed out, one cannot take the reduction in mortality as a criterion of bacteriophage therapy. He suggests that the criterion of cure should be the time when the dysentery bacilli disappear from the stool. That is desirable because in the treatment of bacterial infections one is interested not only in ridding the patient of his symptoms but also in ridding him of

the pathogenic micro-organisms so as to prevent a recurrence of the disease or the transmission of the micro-organisms to susceptible individuals. Using as the criterion of cure the time when dysentery bacilli disappear from the stool involves the difficulties of growing dysentery bacilli from stools which also contain a dysentery phage. Micro-organisms often fail to grow in cultures when a specific bacteriophage is also present in the specimen. This is a recognized difficulty in the laboratory diagnosis of bacillary dysentery because many patients possess a natural dysentery phage in their stools, especially during the later stages of the infection. It would be, even more, a complicating feature if dysentery phage was administered to the patient.

Kligler, Oleinik and Czazkes⁴ have described a technic for culturing dysentery bacilli from specimens containing dysentery phage. It is based on the observation that dysentery phage is inactivated by high dilutions of solution of formaldehyde at a faster rate than are dysentery bacilli. Stools suspected of containing a mixture of dysentery bacilli and dysentery phage are mixed with equal volumes of dilute solution of formaldehyde so as to give a final concentration of solution of formaldehyde U. S. P. 1 to 10,000 and 1 to 7,500. Cultures of the stool suspensions are streaked on solid mediums immediately, and about six, eighteen and twenty-four hours after mixing with the solution of formaldehyde. An exposure of six, twelve or eighteen hours to the concentrations of solution of formaldehyde mentioned causes an inactivation of the dysentery phage and allows the dysentery bacilli to grow. After twenty-four hours' exposure the dysentery bacilli begin to be killed by the solution of formaldehyde. This improved technic should be valuable in a more accurate laboratory diagnosis in cases of dysentery and should be helpful if dysentery phage is being administered to the patient.

Since the issue of whether or not dysentery phage is of value as a therapeutic agent is still far from settled, the reports, pro and con, will be discussed separately.

(a) The following reports are frequently cited as evidence of the ineffectiveness of dysentery bacteriophage as a therapeutic agent. They are cited here with sufficient information to indicate that they are poor scientific tests or that the information is inadequate to justify the interpretation usually assigned to the reports.

Davison⁵ employed dysentery phage in the treatment of 12 children with bacillary dysentery of the Flexner type. However the stool cultures of 2 of the children were negative for dysentery bacilli and in only 7 cases was the dysentery phage tested and found active against the dysentery bacilli. Of these 7 patients 4 died (ages ranged from 3 to 14 months) and 3 recovered (ages ranged from 2 to 30 months). To the 4 patients who died the dysentery phage was given orally. Of the 3 patients who survived 2 received the dysentery phage rectally and 1 received it orally. Two of the 3 patients who survived received the dysentery phage early in the course of the disease. This may be a very important factor in view of the severity of bacillary dysentery in children. The number of cases is too small to justify a statement as to the ineffectiveness of dysentery phage in the treatment of bacillary dysentery.

From the Department of Bacteriology, University of Pennsylvania School of Medicine.

1. Eaton, M. D., and Bayne-Jones, S.: Bacteriophage Therapy: Review of the Principles and Results of the Use of Bacteriophage in the Treatment of Infections, *J. A. M. A.* **103**: 1769-1776 (Dec. 8), 1847-1853 (Dec. 13), 1934-1939 (Dec. 22) 1934.

2. Krueger, A. P., and Scribner, E. J.: The Bacteriophage: Its Nature and Its Therapeutic Use, *J. A. M. A.* **116**: 2160-2167 (May 10), 2260-2277 (May 17) 1941.

3. Seidmayer, H.: Die Behandlung der Ruhr in Kindesalter mit Bakteriophagen, *Ztschr. f. Kinderh.* **60**: 579-589 (Feb.) 1929.

4. Kligler, I. L.; Oleinik, E., and Czazkes, I.: Improved Technic for Isolation of Dysentery Bacteria from Stools by Formaldehyde Inactivation of Bacteriophage, *Am. J. Pub. Health* **33**: 622-624 (June) 1943.

5. Davison, W. C.: The Bacteriophage Therapy of Bacillary Dysentery in Children: Therapeutic Application of Bacteriophages; d'Hérès Phenomenon, *Am. J. Dis. Child.* **23**: 531-534 (May) 1922.

Fletcher and Kanagarayer⁶ tried some dysentery phage, provided by d'Herelle himself, in the treatment of 1 case of bacillary dysentery of the Shiga type and 22 cases of the Flexner type in the Federated Malay States. One tube of bacteriophage containing about 2 cc. was given orally at twelve hour intervals for three doses; in some cases a second course of three doses was given, and in others a subsequent dose was given every morning. Daily bacteriologic examinations of the stools were made, but there was no apparent reduction in the number of dysentery bacilli in the stools. Good results appeared to be obtained in the 1 case caused by Shiga's bacillus, and the dysentery phage produced complete lysis of Shiga bacilli *in vitro*. The dysentery phage was tested *in vitro* against the Flexner strains and it did not produce complete lysis of the organisms. The authors felt that an attempt should be made to find a bacteriophage which would produce a complete and permanent lysis of the Flexner strains, as was available for the Shiga strains.

Taylor, Greval and Thant⁷ employed bacteriophage therapy in the Rangoon General Hospital during 1928 and 1929 with 14 cases of bacillary dysentery of the Shiga type. A mixed bacteriophage was used at the beginning of the case before isolation and identification of the causative organism. Two cc. was given by mouth three times daily. Eight cases served as controls. There was one death among the 8 controls (reported as 12 per cent mortality) and two deaths among the 14 treated cases (reported as 14 per cent mortality). There was a natural bacteriophage present in all the controls. In another series of 6 cases of Shiga dysentery and 6 controls in 1929 there were no deaths in either group. Again there was a natural bacteriophage present in all the controls. In 1929 there was also a series of 6 cases of Flexner dysentery and 6 control cases. One death from uncomplicated dysentery occurred in each group. In the control group 1 patient also died of dysentery complicated with chronic interstitial nephritis. These series of cases contribute nothing to the evaluation of the therapeutic value of dysentery phage, as the authors state that all the control cases showed the presence of a natural bacteriophage at some period. These results were also reported in part II of the report by Asheshov, Taylor and Morison.⁸

Riding⁹ studied 60 cases of acute bacillary dysentery. Of sixty strains of dysentery bacilli isolated, twelve were not lysed by the standard dysentery phage. Of forty-two strains of dysentery bacilli confirmed serologically, two showed no evidence of bacteriophagy. The clinical course of bacillary dysentery was not altered by dysentery phage given orally. It is possible that the strain of dysentery phage employed was destroyed by the p_{H} of the fluids in the gastrointestinal tract, because 6 normal volunteers took the dysentery phage orally, and the dysentery phage could not be detected in their stools. Riding adjusted some of the dysentery phage with 0.1 normal hydrochloric acid to p_{H} 3 and found that there was no loss in activity of the bacterio-

phage. This, of course, is not comparable to the maximum acidity of the stomach.

Nabarro and Signy,¹⁰ observing the effect of dysentery phage in the treatment of dysentery in children, concluded that the results were disappointing and did not feel justified in recommending it. They used d'Herelle's dysentery phage and stated that it did not contain any Sonne phage. During the four year period of their observations they encountered 87 cases of Sonne infection, 18 cases of Flexner Z and 1 case of Flexner W infection. From the information given, one would not expect beneficial effects of the phage therapy.

In a study of 33 infants less than 2 years old, Johnston, Ebbs and Kaake¹¹ used a polyvalent phage active against Sonne (R and S types), Hiss-Russell and Flexner strains of dysentery bacilli, typhoid-like organisms and some strains of colon bacilli. There were 37 children of the same age distribution in the control group. From 51 of 70 cases, organisms of pathogenic character were isolated. These included ten strains of Sonne, five Hiss-Russell or Flexner, twenty-six Schmitz, sixteen Asiaticus and two paratyphoid B. The dysentery phage was given orally with dextri-maltose solution. Clinically, no difference was observed in the two groups.

Vaill and Morton¹² administered dysentery phage to 21 patients. Only 1 control patient without phage is mentioned. Detailed observations are presented for only 5 cases. Quite justifiably the authors make no statement as to whether dysentery phage is or is not of value in the treatment of bacillary dysentery.

A closer approach to a scientific evaluation of dysentery phage therapy is the report by Kessel and Rose.¹³ Although only 68 cases are included in their data, *Shigella paradysenteriae* Flexner was isolated from each case, verified by biochemical and serologic reactions and shown to be completely lysed by the dysentery phage used for treatment. Three to 5 cc. of dysentery phage was given orally at twelve day intervals with a minimum of three doses. Alternate cases were selected for "phage treatment" and for "controls," care being taken that comparable cases exhibited nearly uniform symptoms. In the 1930 series of cases the lytic property of the phage was tested against each organism isolated before the phage was administered. In 12 of the treated cases the dysentery phage was given on the average of four days after admission to the hospital. No deaths occurred in either the group of 12 treated cases or the control group of 10 cases. The average number of days in the hospital was 11.9 for the patients receiving dysentery phage as compared with an average of 10.1 days for the control group. In the 1931 series of cases the dysentery phage was administered within a few hours after admission to the hospital because it was found that about 90 per cent of all Flexner strains were lysed by the particular strain of dysentery phage in use. The phage later was tested against the organisms for its activity. The average number of days in the hospital was eleven for the phage treated patients as compared with 12.1 days for the controls. There were four deaths in the phage treated cases and three deaths in the control cases. Two of the four deaths in the

6. Fletcher, W., and Kanagarayer, K.: The Bacteriophage in the Treatment of Bacillary Dysentery of the Flexner Type, *Bull. Inst. Med. Res., Kuala Lumpur, Federated Malay States*, 1927, No. 3; *abstr. Lancet* 2: 402-403, 1927.

7. Taylor, J.; Greval, S. D. S., and Thant, U.: Bacteriophage in Bacillary Dysentery and Cholera, *Indian J. M. Res.* 18: 117-136 (July) 1930.

8. Asheshov, I.; Taylor, J., and Morison, J.: Recherches sur le Bacteriophage dans l'Inde Britannique, *Bull. de l'Office internat. d'Hyg. pub.* 22: 1882-1892 (Oct.) 1930.

9. Riding, D.: Acute Bacillary Dysentery in Khartoum Province, Sudan, with Special Reference to Bacteriophage Treatment: Bacteriological Investigation, *J. Hyg.* 30: 387-401 (Aug.) 1930.

10. Nabarro, D., and Signy, A. G.: Observations on Dysentery in Children, *Arch. Dis. Childhood* 7: 327-334 (Dec.) 1932.

11. Johnston, M. M.; Ebbs, J. H., and Kaake, M. J.: Bacteriophage Therapy in Acute Intestinal Infection (Summer Diarrhea), *Canad. Pub. Health J.* 24: 443-446 (Sept.) 1933.

12. Vaill, S., and Morton, G. L.: Bacillary

Dysentery, *J. Lab. & Clin. Med.* 22: Bacillary

13. Kessel, J. F., and Rose, E. J.: Bacillary

Dysentery of the Flexner Type, *Ann* (March) 1935.

treated group and one of the three deaths in the control group occurred within twenty-four hours after admission to the hospital, and it was thought that these cases should be considered as reaching the hospital too late for any treatment to be of value. This leaves two deaths each in both the treated and the control groups.

A recent report by Boyd and Portnoy¹⁴ describes the use in a prisoner of war camp of some dysentery phage which was captured during the retreat of the Axis from El Alamein. The highest titer of the dysentery phage against *Shigella* strains was 1:1,000 by the patch test. Either the test, as employed, was not very sensitive or the titer of the dysentery phage was not very high, because 1:1,000 is not a high titer for a bacteriophage. The authors stated that therapeutically the dysentery phage did not abort dysentery. Of 4,590 controls 6.16 per cent, or 283, developed symptoms of dysentery and 2.96 per cent, or 136 of these, had to be admitted to the hospital. Among the phage treated group of 4,070 prisoners 8.52 per cent, or 347, developed symptoms of dysentery and 3.1 per cent, or 126 of these, had to be admitted to the hospital. On the average it required 9.03 days for the blood and mucus to disappear from the stool of 126 control cases as compared with 9.08 days for 124 phage treated cases. The average stay in the hospital was 19.83 days for the 124 control cases as compared with 16.97 days for the phage treated cases. Based on the figures supplied by Boyd and Portnoy, dysentery phage did not abort dysentery sufficiently to prevent hospitalization or shorten the period when blood and mucus were present in the stools, but it did shorten the average stay in the hospital by 2.86 days. It must be remembered that the titer of the dysentery phage was only 1:1,000 by the method of testing.

Comment.—There are nine reports which are cited at various times as evidence of the ineffectiveness of dysentery phage in the treatment of bacillary dysentery. When these reports are examined few, if any, are free of criticism and should not be considered as contributing any direct evidence as to the ineffectiveness of bacteriophage therapy for the following reasons: Davidson's report really concerns only 7 cases. There was no close comparison in age of the patients, time of administration of the dysentery phage during the course of the infection or the route of administration. Fletcher and Kanagarayer thought they obtained beneficial results in the treatment of 1 case of Shiga dysentery, and there was complete lysis *in vitro* of the Shiga bacilli by the dysentery phage. They suggested that an active Flexner phage ought to be developed because they did not get beneficial results in the 22 cases of Flexner dysentery, nor were the Flexner bacilli completely lysed *in vitro*. The report by Taylor, Greval and Thant should not be considered, because the control groups in two studies were found to have a natural phage, and in another study there were only 6 treated and 6 control cases, with one death in each group. Only 40 of 60 cases in Riding's study should be considered, but he was unable to find the phage in the stools after administering it to normal volunteers. He attempted to determine whether an acid reaction inactivated the dysentery phage and found that it was not inactivated by a reaction of pH 3. This is not comparable to the maximum acidity to which the dysentery phage might be exposed in the stomach and suggests that the technic employed for detecting the dysentery phage was inadequate. Boyd and Portnoy¹⁴ detected dysentery phage in the blood

serum and stools of 2 normal volunteers who swallowed dysentery phage as well as in 5 patients with bacillary dysentery to whom dysentery phage was given orally. Nabarro and Signy employed a dysentery phage which did not contain any Sonne phage, and yet 87 of 106 cases of dysentery in their study were caused by the Sonne bacillus. It would be expected that they would obtain unsatisfactory results. Johnston, Ebbs and Kaake employed bacteriophage in the treatment of the condition known as "summer diarrhea" in which the causative agent is too obscure to attempt to evaluate a substance like dysentery phage, which may be specific for only dysentery bacilli or even for certain strains of dysentery bacilli. The report of Vaill and Morton contained detailed observations on 5 patients and only 1 control, and even they made no attempt to evaluate dysentery phage as a therapeutic agent.

The reports by Kessel and Rose¹⁵ and by Boyd and Portnoy¹⁴ are the only reports of the nine cited in this section which are worthy of serious consideration. The conclusion which can be drawn from the report by Kessel and Rose is not that dysentery phage is no good in the treatment of bacillary dysentery but that a much larger series than 68 cases must be studied. In one study by these authors there were no deaths and in another study there were two deaths in each of the control and treated groups which could be attributed to bacillary dysentery. They recognized that the mortality in bacillary dysentery was very low and that some criterion other than a reduction in mortality needed to be used. They attempted to use as a criterion of cure the length of time spent in the hospital, but this is not as good for a criterion as the time of the disappearance of the organisms from the stools, as suggested by Seidlmayer.³ The results of Boyd and Portnoy are important in that they demonstrate that dysentery phage, after being swallowed, can be detected in the blood serum, feces and urine of the patients. Although phage treatment did not lessen the percentage of individuals requiring hospitalization or shorten the period during which blood and mucus were present in the feces, in the phage treated group the average number of days in the hospital was less by 2.86. The dysentery phage had a titer of only 1:1,000 by the method of testing and its use was entrusted to the prisoners of war.

(b) The following reports are frequently cited as evidence of the effectiveness of dysentery bacteriophage as a therapeutic agent. They are cited here with sufficient information to indicate that they are poor scientific tests or that the information is inadequate to justify the interpretation usually assigned to the reports.

da Costa Cruz¹⁵ employed dysentery phage in the treatment of 24 cases of dysentery. However, a bacteriologic study was made in only 12 of the cases. One case was caused by the Shiga strain, 6 cases by the His strain, 4 cases by the Flexner strain and in 1 case no dysentery bacilli were demonstrated. In 1 of the cases caused by Flexner bacilli the organisms were resistant to the action of the bacteriophage *in vitro* and the bacteriophage was without effect *in vivo*. Two cc. doses of dysentery phage were given by mouth. Some cases showed pronounced benefit in four or five hours, some recovering after one or two doses. In 2 cases the symptoms returned on suspension of treatment but disappeared permanently on resumption of the treatment. Actually only 11 cases of bacillary dysentery are described in the study, and although the phage

14. Boyd, J. S. K., and Portnoy, B.: Bacteriophage Therapy in Bacillary Dysentery. *Tr. Roy. Soc. Trop. Med. & Hyg.* 37: 243-262 (Feb.) 1944.

15. da Costa Cruz, J.: O Bacteriophago em terapeutica, *Brasil-Med* 1: 293-300 (June 2) 1923; abstr. *J. A. M. A.* 81: 698 (Aug. 25) 1923.

treatment appeared to be beneficial there were no controls. In 1924 he¹⁶ reported seemingly equally good results with a larger number of cases.

Spence and McKinley¹⁷ obtained good results with dysentery phage therapy in a comparative study on children. Of the 20 cases in which dysentery bacilli were demonstrated in the stools (9 Shiga and 11 Flexner) 19 of the cases were treated within the first week of the disease with only two deaths ("10 per cent mortality"). There were five deaths in the control group of 12 cases ("40 per cent mortality"). The ages of the children in the treated group ranged from 4 months to 6½ years, whereas in the control group the ages ranged only from 1 to 2 years. The average time of recovery was 12.8 days in the control group as compared with 5.8 days in the treated group.

Choudhury and Morison¹⁸ reported satisfactory results in preventing the spread of an epidemic of dysentery. Nearly all the inhabitants in a neighboring village, Nongsier, had died of dysentery and the people in Sohjarang were becoming ill. Shiga and Flexner strains were isolated from some of the patients. Two cc. of bacteriophage in 4 ounces (120 cc.) of water was given each sick person three times during the first day and subsequently twice daily. There were 18 severe cases with three deaths, no deaths among the 19 moderately severe or 43 mild cases.

Compton¹⁹ reported on dysentery phage therapy in 66 cases, but a bacteriologic study was included for only 6 patients. Although he reported beneficial results, there was during this period of phage treatment a general lowering of the death rate for dysentery which he concluded may have been a coincidence or may have been due to the dissemination of the bacteriophage. In 1942 he²⁰ reported that during the period of 1928-1940 the number of cases of bacillary dysentery in Alexandria was not appreciably reduced but that the case mortality dropped from 20 per cent to 6.5 per cent. The case mortality for typhoid in Alexandria for the period of 1928-1938 remained fairly constant at about 18 per cent. In Cairo, where bacteriophage therapy was not used, the case mortality for bacillary dysentery averaged about 29 per cent for the years 1936-1938.

London²¹ reported that dysentery phage compared favorably with the results obtained by emetine and salines. One of the noteworthy features of the therapy appeared to be the early loss of toxicity. This is at variance with the observation of de Costa Cruz, who stated that dysentery phage did not act on the toxins of the dysentery bacilli and for that reason it was often desirable to combine dysentery phage therapy with immune serum therapy. It was impossible for London to do bacteriologic studies, but no amebas were observed microscopically and the symptoms were those of bacillary dysentery. There were 129 cured out of 141 patients treated with bacteriophage, a mortality of 8.5 per cent. In other tea gardens in the district there were 72 cases of dysentery among the population, with a mortality

rate of 12.5 per cent. The conditions under which the tests were made prevent any scientific deduction from the results as to the value of dysentery phage as a therapeutic agent. Sen²² treated 36 cases of bacillary dysentery in children and reported the results no less striking than d'Herelle's results.

Burnet, McKie and Wood²³ observed that the presence of a highly active phage in some cases appears to determine a rapid recovery. Of 21 patients studied, the stools of 7 who recovered and of 3 who died showed an active phage in the feces, whereas 4 who recovered and 7 who died did not have an active phage in the feces.

McCay²⁴ reported that dysentery phage was successful in effecting a speedy cure in 30 per cent of the cases in which it was used, and in the remaining 70 per cent it appeared to have very little effect clinically. In 111 treated cases there were six deaths (5.4 per cent mortality). In the 120 untreated cases there were thirteen deaths (10.8 per cent mortality). The causative agent was isolated in nearly 50 per cent of the total number of cases.

Davenport and Johnsen²⁵ successfully treated 1 case of accidental infection with Flexner bacilli. The Flexner bacilli were present in the stools at the onset and phage was absent. Five cc. amounts of the Flexner phage were given by mouth for three doses. Flexner bacilli soon disappeared from the stools, and phage appeared. After about one week the stools contained neither Flexner bacilli nor the phage.

Querangal des Essarts²⁶ treated 190 cases of bacillary dysentery occurring during twenty-nine days on board two ships in Brest; however, the causative organism was identified in only 59 cases. There were 16 caused by Shiga, 38 by Flexner and 5 by paradyntery bacilli. A polyvalent dysentery phage was employed in the treatment of 185 cases, 5 cc. being given in alkaline water the first day, 10 cc. on the second and third days and 5 cc. on the fourth day. Blood and mucus disappeared from the stools after the second or third day, and after four days the stools appeared normal macroscopically. None of the cases showed severe toxemia. There were no controls.

Melnik, Khastovitch and Nikhinson²⁷ conducted several studies on the therapeutic use of dysentery phage. The preparation which they used was prepared against the Shiga-Kruse strain and was especially active against that strain. Treatment was a single dose of 5 to 15 cc. orally in saline solution repeated two or three times in some cases. Foods yielding acid products were withheld.

Charnock²⁸ in summarizing some general procedures for the administration of bacteriophage, suggested that the surroundings should be alkaline.

Melnik, Khastovitch and Nikhinson recommended no food for several hours after the administration of bacteriophage; then large amounts of fluid should be given.

16. de Costa Cruz, J.: Le traitement des dysentéries bacillaires par le bacteriophage, *Compt. rend. Soc. de biol.* 91: 845-846 (Oct. 7) 1924; *Abstr. J. A. M. Assn.* 83: 1542 (Nov. 8) 1924.

17. Spence, R. C., and McKinley, E. B.: Therapeutic Value of Bacteriophage in Treatment of Bacillary Dysentery, *South. M. J.* 17: 563-568 (Aug.) 1924.

18. Choudhury, B. K. P., and Morison, J.: The Spread of Dysentery in a Khasi Village and Its Treatment with Bacteriophage, *Indian M. Gaz.* 64: 66-67 (Feb.) 1929.

19. Compton, A.: Antidysentery Bacteriophage in the Treatment of Bacillary Dysentery: Record of 66 Cases Treated, with Inferences, *Lancet* 2: 273-275 (Aug. 10) 1929.

20. Compton, A.: Results of Bacteriophage Treatment of Bacillary Dysentery at Alexandria: A Statistical Retrospect, *Brit. M. J.* 1: 719-720 (June 15) 1942.

21. London, J.: Bacteriophage in Its Clinical Aspect, *Indian M. Gaz.* 65: 376-371 (July) 1930.

22. Sen, R.: Treatment of Acute Bacillary Dysentery in Children, *Cale. M. J.* 25: 215-219 (Nov.) 1930.

23. Burnet, F. M.; McKie, M., and Wood, I. J.: Investigations on Bacillary Dysentery in Infants, with Special Reference to Bacteriophage Phenomena, *M. J. Australia* 2: 71-78, 1930.

24. McCay, F. H.: Treatment of Bacillary Dysentery by Bacteriophage, *Indian M. Gaz.* 67: 666-672 (Dec.) 1932.

25. Davenport, G. S., and Johnsen, S. W.: Case of Dysentery (Flexner) Treated by Bacteriophage, *J. Lab. & Clin. Med.* 18: 315-316 (Dec.) 1932.

26. Querangal des Essarts, J.: Le lactériophage dans une épidémie de thérapeutiques et prophylactiques, *Bull.* 1933.

27. R. I., and Nikhinson, I. I.: Therapy of Dysentery by Means of Bacteriophage, *Ann. Bull. Meitschnikov Inst.* 1: 97-108, 1935.

28. Charnock, D. A.: Phenomenon of Bacteriophage, *Am. J. Surg.* 18: 292-295 (Feb.) 1933.

Next day only gradual return to solid food was recommended. They reported that more intense diarrhea may follow the administration of bacteriophage, but it soon disappears. Their first study was in 1929 with 66 cases in which complete recovery was very rapid. Thirteen cases showed complete recovery in twenty-four hours, 25 cases in forty-eight hours, 16 cases in seventy-two hours and 17 cases in four to six days. It proved to these investigators that it is possible to eliminate the illness in two to three days in most cases. It cut down the period of time in the hospital from eight to ten days to two or three days. In another experiment with 19 children, 4 showed no beneficial results yet the Shiga-Kruse bacillus was isolated in every case. They observed that symbiosis of Shiga-Kruse bacilli with enterococci and proteus bacilli lengthened the period of recovery. In a large study there were twenty-seven deaths in 1,059 controls and four deaths in 282 phage treated cases. They reported that the death rate was reduced approximately one half, being 2.5 per cent and 1.4 per cent respectively. Three of the 4 phage treated patients who died were between 60 and 85 years of age. The fourth patient received dysentery phage on the fourth day, recovered in two days and died two weeks later of tuberculosis. These workers regarded the death rate from dysentery in the phage treated group as practically zero; but the mortality rate in the controls was only 2.5 per cent, so it is difficult to use the slight reduction in mortality as a criterion of phage therapy. They claimed that 55.3 per cent of the dysentery patients were out of the hospital four days after treatment, whereas only 18.8 per cent of the controls were out in four days.

Mikeladze, Nemsadze, Alexidze and Assanichvili²⁹ treated 47 cases of dysentery with dysentery phage and experienced three deaths (6.4 per cent mortality), which was about one half the mortality usually observed by ordinary methods of treatment.

Murray³⁰ stated that he treated successfully 146 cases of bacillary dysentery between October 1931 and February 1937 in Shanghai by giving the phage one hour before meals or three hours after a previous meal, preferably in an alkaline medium three times daily.

Haler³¹ employed dysentery phage in controlling dysentery due to the Sonne bacillus in a home for 32 blind children. All those who had been sick, all those unaffected and all the staff received dysentery phage three times daily for a fortnight and thereafter one dose daily. There were no deaths and no bacteriologic study as to whether the phage was active against the organisms for each patient. The sudden cessation of the epidemic is not beyond the realm of a coincidence and, like many of the other reports cited in this section, provides no unequivocal scientific evidence which can be used in evaluating the therapeutic value of dysentery phage.

Soesman³² used a polyvalent dysentery phage in 50 cases (17 adults and 33 children). He reported full recovery and concluded that it was a valuable agent in general practice. Guthof,³³ a battalion medical officer in a German infantry regiment, treated bacillary dysentery with Dysentery Polyfagen (Behring). Good results

were obtained in two to four days in the case of 32 adults and satisfactory results were reported in 3 children with severe infections. No controls were included.

Kliewe and Helmreich³⁴ reported that therapeutically dysentery phage was effective in cases of mild or moderately severe Flexner Y dysentery and it effectively eliminated the carrier state in 16 men. In severe illness there was frequently an exacerbation and only occasionally improvement. Melnick, Khastovitch and Nikhinson²⁷ also reported that frequently the diarrhea was more intense following the administration of dysentery phage but soon disappeared.

Comment.—There are 19 reports which are cited at various times as evidence of the effectiveness of dysentery phage in the treatment of bacillary dysentery. When these reports are examined, few if any should be considered as contributing direct evidence to the effectiveness of bacteriophage therapy, for the following reasons:

The series of cases reported by de Costa Cruz in which bacteriologic studies were made was too small and there were no controls. The series reported by Soesman and by Mikeladze, Nemsadze, Alexidze and Assanichvili are likewise small. Inadequate bacteriologic studies and/or lack of controls form the basis of criticisms of the reports by Choudhury and Morison, Compton, London, Sen, McCay, Murray, Querangal des Essarts, Guthof and Haler. In the report by Spence and McKinley the ages of the children in the control group varied from 1 to 2 years, whereas the ages of those in the treated group varied from 4 months to 6.5 years. In view of the difference in severity of bacillary dysentery in different age groups and the small number of cases, this report cannot be given much weight in evaluating bacteriophage therapy. Burnet, McKie and Wood did not commit themselves on the effectiveness of bacteriophage therapy but merely reported the observation that those individuals who recovered from bacillary dysentery had an active bacteriophage in their feces more often than the patients who did not recover. The single case reported by Davenport and Johnsen cannot, in itself, contribute much in evaluating the effectiveness of bacteriophage therapy in bacillary dysentery, which has such a low mortality in adults.

In the largest number of cases reported in any one study, Melnik, Khastovitch and Nikhinson observed only 2.5 per cent mortality in 1,059 controls as compared with 1.4 per cent mortality in 282 phage treated patients. Of greater significance was that 55.3 per cent of the phage treated patients were out of the hospital four days after treatment, whereas only 18.8 per cent of the controls were out of the hospital in the same time. This might be a better criterion than the decrease in mortality, provided bacteriologic studies were made to insure that the dysentery bacilli had been eliminated from the intestinal tract and that there was not merely the alleviation of symptoms. An interesting observation by these workers was that the symbiosis of Shiga-Kruse bacilli with enterococci and proteus bacilli lengthened the period of recovery. This may be one explanation why dysentery phage may work in 1 case and not in another in spite of the fact that the same strain of the dysentery bacillus may be present and the organism lysed *in vitro* in each case. Many workers have failed to make bacteriologic studies of their cases to make sure that dysentery bacilli were present, so of course

29. Mikeladze, C.; Nemsadze, E.; Alexidze, N., and Assanichvili, T. Sur le traitement de la fièvre typhoïde et des colétes aiguës par le brie térapiophage de d'Herelle, *Médecine* (suppl.) 17: 33-38 (June) 1936.

30. Murray, J. E. The Treatment of Bacillary Dysentery with Bacteriophage, *Practitioner* 141: 199-201 (Aug.) 1938.

31. Haler, D.: Use of Bacteriophage in Outbreak of Institutional Dysentery, *Brit. M. J.* 2: 698-700 (Oct.) 1938.

32. Soesman, J.: De Polyphagebehandeling van Bacillaire Dysenterie in de algemeene praktijk, *Geneesk. Tijdschr. v. Nederl.-Indië* 51: 1862-1874 (Sept.) 1941; abstr. *Biol. Abstr.* 16: 684 (March) 1942.

33. Guthof, O.: Die Behandlung der Ruhr bei der Truppe mit Bakteriophagen, *Deutsche med. Wchnschr.* 67: 375-376 (April) 1941.

34. Kliewe, H., and Helmreich, W.: Ueber Ruhrbakteriophagen, *Munch. med. Wchnschr.* 88: 617-619 (May 30) 1941; abstr. *War Med* 2: 1045-1046 (Nov.) 1942.

the effect of the association of other organisms with the dysentery bacilli has been overlooked, for the most part. The report of Kliewe and Helmreich did not give sufficient details on the therapeutic trials to warrant any more serious consideration than other reports which have been cited. The curing of the 16 carriers is not a definite accomplishment unless one knows that the dysentery bacilli were actually eliminated from the intestine and not that the workers failed to culture the bacilli in the presence of their specific bacteriophage. Some precautions such as those described by Kligler, Oleinik and Czazkes⁴ would have to be employed in order to obtain unequivocal results.

REVIEW OF THE LITERATURE ON THE PROPHYLACTIC USE OF DYSENTERY BACTERIOPHAGE

Persons of all ages are susceptible to bacillary dysentery. It often is endemic in certain areas and frequently becomes epidemic. Except in infants and debilitated persons the mortality rate is not very great, whereas the morbidity rate may be high. An agent which would prevent infection of individuals with dysentery bacilli would be highly desirable. It becomes even more important when the normally hygienic living conditions throughout the world are disrupted by the conditions brought about by war. Only a few reports deal with the prophylactic value of dysentery phage.

Morison⁸ appears to have been the first to try dysentery phage prophylactically. Two doses of phage were given orally to prisoners during each week of September. During that time 5 cases of dysentery appeared among the 192 prisoners receiving dysentery phage (2.6 per cent morbidity). Among 169 prisoners not receiving dysentery phage, who served as controls, there were 28 cases of dysentery (16.5 per cent morbidity).

Melnik, Nikhinson and Khastovitch³⁵ undertook field trials. The control group, comprising 1,126 children ranging in age from 1 to 15 years and living in the same districts as the other children, experienced 72 infections, or a morbidity of 6.38 per cent. Those treated were divided into two groups. The first group, comprising 692 children ranging in age from 1 to 15 years, received a dose of dysentery phage orally every two weeks, so that during June, July and August each child received a total of seven doses. There were 10 infections, or a morbidity of 1.44 per cent. The second group, comprising 662 children of the same age variation, received dysentery phage plus sterile ox bile under the same conditions. Only 1 child acquired bacillary dysentery, or a morbidity of 0.15 per cent.

Kliewe and Helmreich³¹ tested the prophylactic action of dysentery phage on German soldiers. One hundred and thirteen took 10 cc. of dysentery phage following a dose of sodium bicarbonate in $\frac{1}{2}$ cup of tea or coffee on three successive mornings. In the same unit 250 men served as the controls. None of the treated soldiers developed dysentery, whereas there were 10 cases among the controls.

Boyd and Portnoy³⁴ tested prophylactically on prisoners of war some dysentery phage captured during the retreat of the Axis from El Alamein. The number of prisoners in the phage treated group varied from 672 to 811. The incidence of bacillary dysentery per thousand for the four weeks prior to the administration of dysentery phage was 27.58, whereas the rate per thousand during the four weeks following the adminis-

tration of dysentery phage was 19.5. The number of prisoners in the control group varied from 2,081 to 2,297. The incidence of bacillary dysentery per thousand during the same four weeks prior to administration of dysentery phage to the treated group was 11.35, and the rate per thousand for the same four weeks following the administration of phage to the treated group was 10.29. The number of prisoners in the treated group, which was less than 1,000, was about one third of the number in the control group.

REVIEW OF THE LITERATURE ON THE ACTION OF DYSENTERY PHAGE IN EXPERIMENTAL ANIMALS

It is logical that the *in vivo* action of dysentery phage should be tried in experimental animals following the observation of the lytic action *in vitro*. Such reports in the literature are not very numerous, and a fair proportion of them have not appeared until recently. It is obvious that early workers employed dysentery phage on human beings with no more indication for success than the fact that the phage lysed dysentery bacilli in the test tube. Indeed, many instances are reported in which dysentery phage was used indiscriminately. The improvement in our knowledge on animal experimentation during the last twenty-five years has better demonstrated protective action of dysentery phage *in vivo*. Perhaps it will lead to a more scientific trial of dysentery phage in human beings.

Studying the effect of Shiga phage on infections in rabbits produced by the Shiga bacillus, Kabeshima³⁶ found that after the intravenous injection of Shiga phage the bacteriophage entered the bile and was able to exercise its lytic action on the Shiga bacilli. Otto and Munter³⁷ claimed that they confirmed the basic finding of d'Herelle. Bacteriophagy succeeded even in animal experiments. Appelmans³⁸ found that when bacteriophage was injected into guinea pigs it was present in the spleen for at least five days but not in the liver, kidneys, heart, blood, urine, testicles or lungs. When bacteriophage on bread was fed to mice and guinea pigs, it appeared in the stools but not in the organs of the animals killed. Injected, the bacteriophage passes into the blood stream in a few hours. It is eliminated through the kidney and intestine and thus disappears completely in twenty-four to forty-eight hours. The latter observations are at variance with more recent work in which mice were the experimental animals. Bacteriophage is generally accepted as particulate in nature, and it is quite unlikely for a foreign particle to be completely eliminated from a normal animal twenty-four to forty-eight hours after injection. If the blood was tested in liquid medium for the presence of bacteriophage, the lytic action may have been inhibited or masked by the presence of the blood. If a solid medium was employed, the appearance of the lytic areas may have been so altered after exposure of the bacteriophage to the body fluids as to be not readily recognizable. Perez-Otero (personal observations, Morton and Perez-Otero) observed that when testing the heart's blood from mice for the presence of dysentery phage the plaques sometimes were nearly microscopic in size. The minute plaques were detected with the unaided eye only by proper illumination. More important than detecting the presence of bacteriophage

36. Kabeshima, T.: *Thérapie expérimentale des porteurs de germes*, Compt. rend. Acad. d. sc. 170: 71-72 (Jan.) 1920.

35. Melnik, M. I.; Nikhinson, I. M., and Khastovitch, R. I.: *Prevention of Dysentery by Means of Bacteriophage*, Ann. Bull. Metchnikov Inst. 7: 60-66, 1935.

37. Otto, R., and Munter, H.: *Zum d'Herelleschen Phänomen*, Deutsche med. Wochenschr. 47: 1579-1581 (Dec.) 1921.

38. Appelmans, R.: *Le bacteriophage dans l'organisme*, Compt. rend. Soc. de biol. 83: 722-724 (Oct.) 1921.

in the blood is the demonstration of a protective action of the bacteriophage. Arnold and Weiss,³⁹ working with Shiga phage, demonstrated protective action in rabbits. They showed that the bacteriophage was present and active in the blood stream five minutes after injection.

Eliava⁴⁰ failed to find any protective action of dysentery phage when the dysentery phage was injected six hours later or simultaneously with the infecting dose of Shiga bacilli. If the dysentery phage was allowed to come in contact with the Shiga bacilli in vitro even for a few seconds prior to injection into rabbits the animals were protected. Normal rabbit serum or a 5 per cent suspension of rabbit erythrocytes had no effect on the bacteriophage.

After the subcutaneous injection of Shiga phage into guinea pigs, Smirnow and Goldin⁴¹ detected it in the spleen after seventeen days, in the lymph nodes after thirteen days, in the liver after three days and in the blood after two days. In the case of immune guinea pigs the bacteriophage was present after twenty-four hours but not after forty-eight hours, which is to be expected. Specific antibodies combine with the foreign particle when introduced and bring about rapid elimination from the immune animal's body.

The Rakietens⁴² observed that developing chick embryos were killed with relatively small numbers of Flexner bacilli. Death of the embryos could be prevented by dropping a small amount of dysentery phage onto the chorioallantoic membrane five hours after the inoculation of the embryos. There appeared to be a relationship between the survival of the embryos and demonstrable proliferation of the bacteriophage. MacNeal, Blevins and Pacis⁴³ studied the protective action of anti-Sonne phage in protecting chick embryos against infection with *Shigella paradysenteriae*, variety Sonne. The dysentery phage protected 60 per cent of the embryos for four days, compared with a survival of 19 per cent in the controls. Only 2 per cent of the live embryos hatched in the control group, as compared with 28 per cent in the group treated with Sonne phage, which is a significant difference in mortality rates.

By injecting Shiga bacilli intracerebrally, Dubos, Straus and Pierce⁴⁴ were able to produce a meningitis in mice which was fatal in three to ten days. Shiga phage injected into the general circulation of the mice can multiply in the brain of infected mice. Under proper conditions the Shiga phage protects the mice against the fatal infections, and the protection appears to depend on the early establishment of a high bacteriophage level in the infected animal.

Employing white Swiss mice as experimental animals and Flexner strains of dysentery bacilli, Morton and Engley⁴⁵ demonstrated prophylactic and therapeutic actions for dysentery phage. Separate groups of 3 mice each were injected intraperitoneally on successive days for seven days with 1 cc. of dysentery phage containing approximately 1 billion phage particles per cubic centi-

meter. Groups of mice were injected in a similar manner with the same bacteriophage after its lytic activity had been destroyed by heat. On the seventh day all the mice received 10,000 lethal doses of dysentery bacilli (4 bacilli constituted 1 minimum lethal dose). The mice receiving the heat inactivated dysentery phage died, whereas those receiving the active dysentery phage remained well, thus demonstrating the prophylactic action of the dysentery phage. If 1 cc. of dysentery phage was injected intraperitoneally practically simultaneously with 12,000 lethal doses of dysentery bacilli, the mice remained well. A majority of the mice could not be protected if more than three hours elapsed between the infecting dose of dysentery bacilli and the injection of dysentery phage. A strain of dysentery phage developed against the X type of Flexner bacilli protected mice against either the X or the Z type of Flexner bacilli. A strain of dysentery phage developed against the Y type of Flexner bacilli protected mice against virulent bacilli of the Z type. The X and Y dysentery phages lysed the X and Z types in vitro. Dysentery phage developed against the X type failed to lyse in vitro a virulent strain of the Newcastle type of Flexner bacilli, and it also failed to protect mice.

In the therapeutic tests when 2 out of 3 mice were protected, the ratio of phage particles to virulent dysentery bacilli was 1:8 in the case of X phage and the homologous X strain of bacilli, 1:7 in the case of X phage and a Z strain of bacilli and 1:5 in the case of a Y phage and a Z strain of bacilli. It is doubtful whether it would be possible to protect mice or other animals against so many virulent organisms with such a small amount of bacteriophage unless more of the specific bacteriophage was in some way produced within the body of the infected animals. The Rakietens⁴² observed a proliferation of Flexner phage in chick embryos which survived the experimental infections. Dubos, Straus and Pierce⁴⁴ also demonstrated multiplication of Shiga phage in mice experimentally infected with Shiga bacilli. Morton and Perez-Otero⁴⁶ demonstrated quantitatively the increase of dysentery phage in mice. They also demonstrated that the dysentery phage is not eliminated completely from the circulating blood of mice in a couple of days, as was reported by some of the earlier workers. One cc. of dysentery phage containing 1,400,000,000 particles was injected intraperitoneally into mice. After twenty-four hours there were on the average 30,000,000 particles per cubic centimeter of blood as taken from the heart. There was a gradual decrease in the titer of the phage in the blood until seven days after the initial injection, when there were slightly less than 50 particles per cubic centimeter of blood. On the fourth day following the initial injection of dysentery phage, the titer of the phage in the blood of the mice was about 200 particles per cubic centimeter. If the mice at this time were injected with virulent dysentery bacilli not susceptible to the dysentery phage in the test tube, the mice died rapidly without any appreciable increase in the titer of the dysentery phage in their blood. However, if the mice were injected with virulent bacilli susceptible to the dysentery phage in the test tube, the mice remained well and there was an increase by as much as 80,000 fold in the amount of dysentery phage in the circulating blood. Within one hour after the intraperitoneal injection of dysentery bacilli into normal mice, it is possible

39. Arnold, L., and Weiss, E.: Prophylactic and Therapeutic Possibilities of Twort d'Herelle's Bacteriophage: Preliminary Paper, *J. Lab. & Clin. Med.* 12: 20-31 (Oct.) 1926.

40. Eliava, G.: Au sujet de l'adsorption du bacteriophage par les leucocytes, *Compt. rend. Soc. de biol.* 105: 829-831 (Jan.) 1930.

41. Smirnow, P., and Goldin, M.: Das Schicksal des parenteral eingegebenen Bakteriophagen in tierischen Organismus, *Centralbl. f. Bakt.* (part 1) 122: 512-515 (Oct. 20) 1931.

42. Rakieten, T. L., and Rakieten, M. L.: Bacteriophages in the Developing Chick Embryo, *J. Bact.* 45: 477-484 (May) 1943.

43. MacNeal, W. J.; Blevins, A., and Pacis, M.: Test of Anti-dysentery Agents in Embryonated Eggs, *J. Bact.* 46: 111 (July) 1945.

44. Dubos, R. J.; Straus, J. H., and Pierce, C.: The Multiplication of Bacteriophage in Vivo and Its Protective Effect Against an Experimental Infection with *Shigella Dysenteriae*, *J. Exper. Med.* 75: 161-168 (Sept.) 1943.

45. Morton, H. E., and Engley, F. B., Jr.: Protective Action of Dysentery Bacteriophage in Experimental Infections in Mice, *J. Bact.* 47: 475 (May) 1944.

46. Morton, H. E., and Perez-Otero, J. L.: The Generation of Dysentery Bacteriophage in Vivo During Experimental Infections in Mice, *J. Bact.* 47: 475-476 (May) 1944.

to demonstrate a bacteremia. In the case of mice possessing dysentery phage in their circulating blood it is also possible to demonstrate both dysentery phage and dysentery bacilli. The dysentery phage was inactivated with diluted solution of formaldehyde following the technic of Kligler, Oleinik and Czazkes⁴ in order to cultivate the dysentery bacilli successfully. This would imply that bacteriophagy may take place in the blood stream in addition to other places in the animal body.

Comment.—Within a year and a half five reports have appeared demonstrating, without any doubt, the fact that bacteriophagy can take place in vivo and protect developing chick embryos and white mice against fatal infections of dysentery bacilli. Three of the five reports demonstrated that the amount of bacteriophage increases when bacteriophagy takes place in vivo. There is only one report in the literature of the failure of dysentery phage to protect experimental animals. That is the report in the French literature of Eliava, and he was using the Shiga strain, the most toxic of the dysentery bacilli. Kabéshima, Arnold and Weiss and Dubos, Straus and Pierce used the Shiga strain and demonstrated protective action of Shiga phage in vivo, so perhaps the report of Eliava can be ruled out on the basis of personal technic. The earlier reports (Appelmans in 1921 and Smirnow and Goldin in 1931) on the rapid elimination of dysentery phage from the circulation are at variance with what we would expect following the injection of foreign particles into a normal animal. The quantitative work of Dubos, Straus and Pierce and of Morton and Perez-Otero offer proof that dysentery phage is not completely eliminated from the blood in twenty-four and forty-eight hours.

The quantitative work by Morton and Engley is important in that it demonstrates how little dysentery phage is really needed in protecting animals from experimentally induced infections with dysentery bacilli. Most investigators have worked with an amount of phage far in excess of that needed for protection. This may lead to erroneous assumptions of the amount of bacteriophage needed in treating animals larger than mice.

COMMENT AND SUMMARY

The history of dysentery phage may be divided into three phases. The first and most exciting period was the discovery by d'Herelle of the invisible agent which causes transmissible lysis of dysentery bacilli in the test tube. This phenomenon, called bacteriophagy by d'Herelle, was found to take place with micro-organisms other than *Shigella*, so that now it is regarded as commonplace. The second period in the history of dysentery phage was the attempt to use this microscopic parasite for bacteria in the treatment of bacillary dysentery in man. Many of the trials were not carefully planned scientific experiments, so the reports of such trials contributed little if anything toward evaluating dysentery phage as a therapeutic agent. Trials were made without suitable controls. Often a bacteriologic diagnosis of bacillary dysentery was not made; frequently no attempt was made to determine whether the dysentery phage was active against the patient's strain of dysentery bacilli, and often the results were of no statistical importance because of the small number of patients employed. There are about twice as many favorable as unfavorable reports on the use of dysentery phage therapeutically, but the conditions under which the tests were carried out make all the reports, seemingly good or bad, unsuitable for scientific evaluation. Only a few investigators used the dysentery phage

prophylactically, and these reports appear more encouraging than the therapeutic reports. The third phase of the history of dysentery phage has been the in vivo tests, attempts at preventing or curing experimentally induced infections in laboratory animals. The majority of these tests demonstrate that dysentery phage has a definite prophylactic and therapeutic action against experimentally induced infections with dysentery bacilli, both the Shiga and Flexner varieties. All of five recent reports are in agreement in this respect.

The next phase in the history of dysentery phage should be carefully planned prophylactic and therapeutic trials on human beings, taking advantage of the knowledge gained from in vitro tests and in vivo tests on experimental animals. Quite illogically, tests on man were made before the dysentery phage was tried on experimental animals.

In summary it may be stated that:

1. The reports on the therapeutic trials of dysentery phage in man are inconclusive. This is in part due to the nature of the experiments, and the problem of the therapeutic action of dysentery phage must be considered as still unsettled.
2. In experimentally induced infections with dysentery bacilli in laboratory animals, dysentery phage has demonstrated an unmistakably therapeutic action.
3. In therapeutic trials it is necessary to perform a bacteriologic diagnosis and demonstrate dysentery bacilli in each case.
4. Susceptibility of the patients' organisms to the bacteriophage to be employed should be demonstrated in vitro in each case.
5. The criterion for cure should be the disappearance of the dysentery bacilli from the stools. This should be verified by repeated cultures, perhaps employing a technic such as that of Kligler, Oleinik and Czazkes,⁴ which makes possible the cultivation of dysentery bacilli even in the presence of a specific dysentery phage.
6. It is necessary to know that the dysentery phage reaches the dysentery bacilli in an active form.
7. Obviously, suitable controls are necessary. These should be of comparable age and duration of illness and should be free of a natural bacteriophage. Determining the presence of the same pathogenic organism in the controls and its susceptibility to the dysentery phage is not sufficient. Other organisms in the intestinal flora, in both the controls and the treated patients, should also be investigated in case symbiosis with other organisms interferes with the therapeutic effect of bacteriophage, as Melnick, Khastovitch and Nikhinson thought it did.
8. Prophylactically, it has been shown that dysentery phage is capable of preventing bacillary dysentery in man and also capable of preventing lethal infections experimentally induced in laboratory animals.
9. It is necessary to know that the dysentery phage will be active against the strains of dysentery bacilli to be encountered.
10. No lytic action in vitro, no protective action in vivo.
11. A very striking feature of the in vivo action of dysentery phage has been the small amount of dysentery phage required for the protection of experimental animals. A ratio of 1 phage particle to 8 virulent dysentery bacilli has been shown to afford protection in animal experiments.
12. Bacteriophage is unique among antibacterial substances in that, as it is used to destroy bacteria in the animal body, more of the active agent is produced.

THE JOURNAL OF THE
AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - CHICAGO 10, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, MARCH 10, 1945

THE SUPPLY OF PREMEDICAL AND
MEDICAL STUDENTS

The Council on Medical Education and Hospitals has repeatedly urged the necessity for changes in the present policies of governmental agencies, including the Selective Service System, having to do with the education of premedical students. The regulations now in force threaten either a reduction in freshmen enrolments or a far poorer quality of students in late 1945 and 1946. The House of Delegates of the American Medical Association at its meeting in Chicago in June 1944 took official cognizance of the seriousness of this problem and addressed communications to the President, to the War and Navy departments and to the Selective Service System urging that immediate steps be taken to remedy the situation.

Now official notice of this threat to medical education and medical standards has been taken by Senator Allen J. Ellender of Louisiana, who introduced on February 26 Senate Bill 637, which has been referred to the Committee on Military Affairs and which is printed in full elsewhere in this issue (p. 599). The bill includes provisions for the deferment of adequate numbers of premedical students for a period of two years and further provides for the deferment of such numbers of medical students as will be sufficient to supplement civilian sources of students for the maintenance of full classes. The bill also calls for the return to medical and premedical studies of qualified members of the armed forces who have honorably served for a year in the military forces. The latter provision may require some clarification, especially as regards the selection of students for this type of training.

At the time of introducing his bill, Senator Ellender pointed out that the discontinuance of the Army Specialized Training Program and the Navy V-12 Programs would, with a few exceptions, soon result in the cessation of the admission of new students to the freshmen classes in the medical and dental schools. This is a

manpower problem of the present moment, he said, only because a critical shortage of doctors and dentists after 1948 must be anticipated and can be prevented only by action taken now, before September 1945. The army and navy medical corps are certain to need more physicians after the war than were required before this war started; the Veterans Administration will demand eight or ten thousand doctors; physicians will be required to administer the features of the compulsory military training program if that should be provided by Congress and an unknown number of doctors may be wanted to provide the most basic needs of the now occupied countries of Europe, where no medical education has been possible for five or more years. All these requirements are likely to result in a greater deficit of medical men than ever before. The profession is being depleted by about four thousand deaths and an unknown number of retirements annually, Senator Ellender said, and this picture will add up to a very serious situation unless a continuous flow of medical student graduations is maintained annually.

The introduction of this bill represents a great step forward toward the objectives of continued medical education and adequate training of qualified young men. The main outlines of this bill are fully endorsed by the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges, both of which took part in several conferences on the proposals embodied in the bill with a representative of Senator Ellender. Both medical groups will doubtless participate in the hearings to be held on this bill, the principal provisions of which should receive the full and active support of medical schools and medical societies everywhere.

SENTIMENTALISM ABOUT DOGS

A bull terrier, a family pet, in an unexplained outburst seized and killed the 21 month old daughter of its owners by shaking the child until its neck was broken. The incident may be dismissed as an accident, tragic and horrible. Admittedly large numbers of instances are available in which dogs have been faithful companions, guardians and sometimes martyrs to the interests of their owners. In the present instance the owners of the dog concluded that the dog was dangerous and that the only thing to do was to have him killed. The destruction of the dog is to be accomplished by humane society authorities and apparently is a calmly reasoned act, all the more remarkable in view of the emotional tension in which the stricken parents must be living.

When this decision was reached by the parents, numerous self-styled dog lovers apparently deluged them

with telephone calls, letters and telegrams; one apparently even attempted legal action to save the life of the dog. The total lack of consideration and the crass indifference shown by these busybodies toward the grief and bereavement of the parents is almost unbelievable; yet these are the stuff of which antivivisectionism is made. To them the life of a dog is more important than the life of a child. Their warped mentalities conceive that this dog should be saved and pampered, perhaps to kill another child, certainly to be a constant care, expense and potential menace. The same muddled thinking would deny the use of animals to scientists in the laboratory, preferring that rats, mice, guinea pigs and frogs should live even if the lives of human beings must be lost in consequence.

The deadly influence of antivivisectionism on character, keenly perceived and analyzed by the late Dr. W. W. Keen, is an ever present menace. Uninformed people leave money, sometimes in large amounts, to be spent in cynical disregard of public welfare and public health by conscienceless executive secretaries who fatten on the gullibility of their own clients. Their antivivisectionism functions contrary to the interests of the animals which they profess to serve, for animals also are beneficiaries of animal experimentation. An incident such as that which forms the basis of this editorial serves to reemphasize the difficulties faced by physicians and scientists in attempting to carry out their service to mankind by experiments on animals.

THE PROGRESS OF THERAPY

Physicians, listing the ten most important drugs used in medicine in 1910, chose them in the following order: (1) ether, (2) morphine, (3) digitalis, (4) diphtheria antitoxin, (5) smallpox vaccine, (6) iron, (7) quinine, (8) iodine, (9) alcohol and (10) mercury. Just five years previously the Council on Pharmacy and Chemistry had been established to eliminate from medicine the shotgun therapy based on indiscriminate empirical remedies. Out of their efforts came such works as *Useful Drugs*. The same impetus brought about intensive revision of the *United States Pharmacopeia*, which today, along with *Useful Drugs* and *New and Non-official Remedies*, may be said to constitute the proved armamentarium of the physician.

Tremendous advancement has occurred in the field of therapy since 1910—so great indeed that it is almost impossible to list today ten individual remedies which might be said to be the ten most important or useful in medical practice. In an effort to determine what leaders in medicine might choose as most important in 1945 the editor of *THE JOURNAL* addressed a communication to some of the professors of medicine in

leading medical schools.¹ The largest number of replies put penicillin first. In considering penicillin, however, other antibiotic drugs were added. Certainly the sulfonamides come exceedingly close from the point of view of their application under a wide variety of circumstances. At least five of the physicians consulted placed morphine first on the list of important drugs, yet many added to morphine the names of some of the barbituric acid derivatives. Ether still merits a place on any list of important drugs, but today the anesthetist has access to nitrous oxide-oxygen, cyclopropane, ethylene, local anesthesia, spinal anesthesia and continuous caudal anesthesia as well as the basal anesthetics injected directly into the blood. Digitalis still holds a place among the most important of remedies. The diphtheria antitoxin of 1910 is now supplemented by innumerable antitoxins and vaccines established as specific against certain infections. New on the modern list are blood plasma, whole blood for transfusions, gamma globulin and all of the other substances derived from blood. Little was known in 1910 of the products of glands. Today the life-saving properties of insulin, liver extract, estrogenic and male sex hormones, adrenal and thyroid are unquestioned. Little was said in 1910 about vitamins, but the vitamins must be included in any significant list because of their specific virtues in cases of established deficiencies such as rickets, scurvy, pellagra and beriberi. Questionable on any modern list would be the arsphenamines. If penicillin develops as is anticipated in the treatment of syphilis, the arsphenamines may go far down on any list of important remedies. Since malaria appears to be the most widespread of all diseases on the face of the earth, the quinine of previous generations must be assisted by quinacrine and other specific anti-malarial remedies.

A 1945 list of the most important remedies might be:

1. Penicillin and the sulfonamides and antibiotics.
2. Whole blood, blood plasma and blood derivatives.
3. Quinine and quinacrine.
4. Ether and other anesthetics, morphine, cocaine and the barbituric acid derivatives.
5. Digitalis.
6. Arsphenamines.
7. Immunizing agents and specific antitoxins and vaccines.
8. Insulin and liver extract.
9. Other hormones.
10. Vitamins.

¹ Reports were received from David P. Barr, New York; Harry Beckman, Milwaukee; Henry A. Christian, Boston; Arthur C. DeGraff, New York; Harry Gold, New York; Frederic M. Hanes, Durham, N. C.; Tinsley R. Harrison, Dallas, Texas; Ernest E. Irons, Chicago; Chester S. Keefer, Boston; Stuart Mudd, Philadelphia; J. H. Musser, New Orleans; O. H. Perry Pepper, Philadelphia; Hobart A. Reimann, Philadelphia; Austin E. Smith, Chicago; Torald Sellmann, Cleveland, and W. O. Thompson, Chicago.

Physicians of long experience will arise at once to defend iron, iodine, alcohol, mercury and even aspirin. Actually the choice of the most important remedy depends on the condition with which the physician is confronted. For malaria there is no question about the value of quinine or quinacrine; for asthma, epinephrine or aminophylline would seem most important. For amebic dysentery emetine, chiniofon or carbarsone would be the choice. If the patient just happened to have postprandial indigestion, baking soda might be considered the sovereign remedy. One of the experts put common table salt as number 4 on his list and glucose as number 5.

So great then has been the advancement of therapy that the choice of the ten most important remedies in medicine would baffle any assemblage of experts. The physical therapists might well question the entire list. The surgeons and authorities in the field of cancer would have ideas seriously varying from those of the internists. All physicians may well take great pride in all that medicine has accomplished in the past quarter century!

COLLOIDAL PENICILLIN

Penicillin injected intramuscularly or intravenously is rapidly excreted in the urine, an effective therapeutic level in the blood stream rarely being maintained for as long as two hours after injection. In order to prolong the effective concentration in the blood clinicians repeat the intramuscular or intravenous dose at three to four hour intervals or resort to some method of continuous instillation.¹ Several alternate methods of prolonging penicillin action have been suggested by recent experimenters, such as the simultaneous injection of diodrast² or para-aminohippuric acid,³ both of which retard the rate of renal excretion of penicillin. Others have suggested suspending the intramuscular dose in oil or in oil containing 0.75 to 6 per cent of beeswax⁴ or of reducing the rate of local absorption by prolonged chilling of the injected muscle⁵ or by adding epinephrine to the penicillin dose.⁶ Two of these methods have apparently given encouraging clinical results, particularly in the treatment of gonorrhea.

What may prove to be an equally successful method has been suggested by Chow and McKee⁷ of the Squibb Institute for Medical Research, New Brunswick, N. J. They combined crystalline penicillin with human plasma protein to make a large penicillin-protein complex. This

colloid is apparently much more slowly absorbed from the injected muscle and more slowly excreted by the kidneys than is free or unbound penicillin. To make such a combination, 125 units of penicillin per cubic centimeter was added to buffered solutions of human alpha, beta or gamma globulin or to human serum albumin. The mixture was placed in a cellophane bag suspended in phosphate buffer solution. After eighteen to twenty-four hours continuous rocking, the relative penicillin titer was determined in the bag and the surrounding dialysate. Within the limits of the experimental error there was no evidence of a union between penicillin and any of the globulins. Approximately two thirds of the penicillin in the albumin mixture became nondialysable, presumably as a result of physical or chemical union with albumin molecules.

The resulting penicillin-albumin complex was then isolated in a state of at least partial purity by repeated precipitation with 50 per cent alcohol; unbound penicillin is soluble in this concentration. A dry powder was obtained by lyophilization. Unlike the sulfonamide-albumin complex, which is devoid of bacteriostatic properties,⁸ the penicillin-albumin complex possesses full antibiotic powers. Injected intramuscularly into mice, the complex is much more slowly excreted in the urine than unbound penicillin. Since the protein in this complex is normal human albumin, Chow predicts that the penicillin-protein complex will be found to be nontoxic and nonantigenic for man. The therapeutic efficiency of the new colloidal penicillin is now under investigation.

Current Comment

CAMPAIGN TO CHECK AUTOMOBILE BRAKES

The International Association of Chiefs of Police¹ recently announced a campaign of nationwide scope to lead automobile drivers to check their brakes. This program will be conducted between April 15 and June 1. The campaign has been evolved by the police association as a device to focus public attention on the seriousness of the traffic accident situation. When a similar program was started in Michigan one of seven cars failed to meet brake check requirements, and when the program ended only one of twenty-three cars failed to meet such requirements. During the period of the campaign, about 11 per cent of all cars checked had brakes considered inadequate or unsafe. The influence of physicians may well be placed behind this program for its public health importance and as a means of lessening emergency calls in this time of stress.

1. The Indications, Contraindications, Mode of Administration and Dosage of Penicillin, War Production Board, Civilian Penicillin Distribution Unit, 226 West Jackson Boulevard, Chicago, Dec. 1, 1944.

2. Rammelkamp, C. H., and Bradley, S. E.: *Proc. Soc. Exper. Biol. & Med.* **53**: 29, 1943.

3. Beyer, K. H.; Woodward, R.; Peters, L.; Verwey, W. F., and Mattis, P. A.: *Science* **100**: 107, 1944.

4. Romansky, M. J., and Rittman, G. E.: *Science* **100**: 196, 1944.

5. Trumper, M., and Hutter, A. M.: *Science* **100**: 432, 1944.

6. Fisk, R. T.; Foord, A. G., and Alles, G.: *Science* **101**: 124, 1945.

7. Chow, B. F., and McKee, C. M.: *Science* **101**: 67, 1945.

8. Davis, B. D.: *J. Clin. Investigation* **22**: 753, 1943.

1. Release from International Association of Chiefs of Police, Safety Division, 20 North Wacker Drive, Chicago 6.

MEDICINE AND THE WAR

ARMY

NO FURTHER REDUCTION IN SIZE OF ARMY MEDICAL CORPS

The Office of the Surgeon General has advised that its recent action as approved by War Department directive of releasing a few medical corps officers to bring the strength of the corps within the allotted ceiling (*THE JOURNAL*, Dec. 30, 1944) has been completed. At the present time the strength of the medical corps is within reasonable conformity with the troop basis of the Army, and no further reduction is contemplated until such time as overall planning now in process concerning the projected needs for medical care of the Army can be ascertained and a reduction of medical corps officers made in the same proportion.

Medical Corps officers who will enter on active duty after completing the Army Specialized Training Program in medicine and a suitable internship will during the coming months be used largely to replace those Medical Corps officers who are lost to the service.

ARMY PREVENTIVE MEDICINE OFFICERS MEET

A three day conference of army preventive medicine officers was recently held at the School of Hygiene and Public Health, Baltimore, and was attended by representatives from the Office of the Surgeon General, service commands, army air forces and army ground forces. The purpose of the conference was to present recent developments in research and current policies and to afford ample opportunity for discussion of local preventive medicine problems and their solutions. The conference was opened by Major Gen. Philip Hays, commanding general of the Third Service Command. Topics discussed the first day were immunization, control of infectious diseases and insect control. The presiding officer was Col. Thomas B. Turner, assistant chief, Preventive Medicine Service, Office of the Surgeon General. Topics discussed the second day were problems of sanitary engineering, industrial medicine in the Army, public health aspects of tropical diseases, laboratory services and army veterinary activities. The presiding officer was Col. W. A. Hardenbergh, director of the Sanitary Engineering Division, Preventive Medicine Service, Office of the Surgeon General. Topics discussed the third day were venereal disease control, nutrition in troops, health programs in occupied countries, foreign quarantine in military traffic and medical intelligence. The presiding officer was Lieut. Col. Elliott S. Robinson, assistant chief, Preventive Medicine Service, Office of the Surgeon General.

ARMY HOSPITALS SEEK OCCU- PATIONAL THERAPISTS

A serious shortage of occupational therapists, who play a vital role in the reconditioning of sick and wounded soldiers, exists in army hospitals, in addition to the lack of nurses and trained medical technicians. The Office of the Surgeon General reported that of the 1,800 qualified registered occupational therapists in the country the Army has only 225 and has immediate need for another 225. Openings exist in all parts of the country for this highly important work. Applicants who are employed on a civilian status must be graduates of a course in occupational therapy approved by the Council on Medical Education and Hospitals of the American Medical Association or must be a registered occupational therapist. The approved course has a minimum requirement of at least four years in an approved college. The Civil Service classification is subprofessional 5 and the pay is \$1,800 a year, plus overtime. Applications for employment should be made directly to the Office of the Surgeon General, Washington, D. C., and application forms are obtainable at any post office.

MISSING IN ACTION

Capt. John S. Rodda, formerly of Portland, Ore., has been reported missing in action since Dec. 19, 1944, at which time he was in action in Belgium. Dr. Rodda has been almost constantly in forward and very active areas ever since his D day landing in Normandy with the glider units which followed the parachutists in ahead of the beach landings. He participated in the Presidential citation of his unit for this work and received the Purple Heart because of injuries received when his flak damaged glider crashed. Dr. Rodda graduated from the University of Oregon Medical School, Portland, in 1940 and entered the service July 25, 1941.

Major G. D. Fridline, formerly of Ashland, Ohio, has been reported missing in action since Dec. 21, 1944. Dr. Fridline graduated from Boston University School of Medicine in 1931 and entered the service in October 1940 as commanding officer of Company H, 112th Medical Regiment, Ohio National Guard, and was later assigned to the medical detachment of the 165th Infantry.

Capt. Charles F. Payton, formerly of Birmingham, Mich., has been reported missing in action on the Belgian-German front since January 20. He was stationed at front line first aid stations during much of the fierce fighting of the Belgian bulge. Dr. Payton graduated from the University of Michigan Medical School, Ann Arbor, in 1942 and entered the service Oct. 7, 1943.

TRAINING OFFICERS FOR THE ARMY MEDICAL CORPS

Courses of instruction in internal medicine and medical specialties and in general surgery and surgical specialties which are being set up in army service forces general and certain regional hospitals for army officers will be discontinued at the Mayo Foundation with the completion of the present quarters, according to an announcement at the Office of the Surgeon General.

Officers of the Army Medical Corps will continue in the Mayo Foundation their training in anesthesia, physical medicine and clinical roentgenology according to the usual schedule that has been in operation in these courses.

Courses in maxillofacial and plastic surgery and in other special fields for individual officers will be continued at the Mayo Foundation as requested by the Army or Navy. Over 1,200 officers have participated in the several courses in the Mayo Foundation since they were inaugurated in January 1942. These courses were organized on the assumption that during a twelve weeks period a sufficiently comprehensive review of the general fields of medicine and surgery could be accomplished to conform to the varied needs, experiences and training of the officers.

Following the war it is planned that facilities of the Mayo Clinic will again be utilized for courses on a basis similar to those conducted during the past three years for physicians being detached from military service and for civilian physicians.

WACS TO BE NURSE'S AIDES

As the result of plans to enlist medical Waes, the recruiting of full time remunerated nurse's aides has been stopped by a War Department directive. Aides already in the service or now undergoing training will be retained. Because of the difficulty of transferring these civilians away from home and home responsibilities, the new plan has been adopted in the knowledge that medical Waes can be transferred readily to places where there may be an acute shortage of nurses.

The drive has been started to enlist 8,000 Waes, many of whom are expected to carry on nonprofessional medical work in army hospitals. To help nurses of the Regular Army, 100 medical Waes are now being assigned to each army hospital.

ARMY NURSE CORPS NEEDS 16,000 NURSES IMMEDIATELY

Major Gen. George F. Lull, Deputy Surgeon General, recently announced that the Army needs 16,000 additional nurses immediately in order to care adequately for wounded and sick American soldiers. Hospital units have been shipped overseas without nurses because of the shortage, which meant that overseas nursing personnel, already overtaxed, had to be drawn on to staff these units. Of the Army Nurse Corps strength of 44,000, about 71 per cent are overseas, some having been in foreign theaters for several years. When the full quota of 60,000 is reached it will be possible to make more effective a rotation plan that will provide much needed change for the overworked nurses who have been away from home for long periods.

AMPUTATION CASES IN THE U. S. ARMY

In a recent report from the Office of the Surgeon General, it is stated that amputation cases in the United States Army reached a total of 6,027 as of January 1945, including 1 triplicate case, the first known in either this war or the first world war. There are no "basket" cases, the term used to denote loss of all four limbs, nor were any reported during the entire course of the first world war.

In the first world war there was a total of 4,403 amputation cases. Of the 6,027 cases in this war, 331 represent double amputations, that is, loss of two limbs. The remainder, or 5,695, are soldiers with one arm or one leg lost. Of the total number, approximately 2,000 cases have been treated at one of the six army general hospitals specializing in amputation cases and returned to civilian life. The hospitals include

Walter Reed General Hospital, Washington, D. C.; Lawson General Hospital, Atlanta, Ga.; Percy Jones General Hospital, Battle Creek, Mich.; England General Hospital, Atlantic City, N. J.; McCloskey General Hospital, Temple, Texas, and Bushnell General Hospital, Brigham City, Utah.

Before discharge, each man is individually fitted with a custom made prosthesis and taught complete use of his artificial limb. Only when he is able to care for himself and take his place in the civilian world is he released from army jurisdiction and medical care.

LIEUT. REBA Z. WHITTLE A PRISONER OF WAR

Lieut. Reba Z. Whittle, formerly of Rock Springs, Texas, has chosen to remain in a German prison camp at Stalag 9 C near Meiningen to care for wounded American prisoners of war, although she is eligible for repatriation. It was reported that when the Germans learned that she was "protected personnel," according to the terms of the Geneva convention, she was given the opportunity to be released. She realized, however, that the wounded American prisoners needed nursing care and she offered to remain to take care of them. Her offer was accepted and she is now a prisoner of war. It is believed that Lieutenant Whittle is the only army nurse who is a prisoner of war in Germany.

COLONEL DUNCAN NEW CONSULTANT

Col. G. G. Duncan, formerly chief of the Medical Service at Thomas M. England General Hospital, Atlantic City, has been assigned as consultant in medicine, Headquarters, Second Service Command, Governors Island, N. Y. He replaced Lieut. Col. Herman Blumgart, who has been assigned overseas.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

REVISE SELECTIVE SERVICE DEFERMENT POLICY

The National Headquarters of Selective Service, in an amendment of Local Board Memorandum No. 115, has revised the procedures relative to the deferment of men under 38 years of age and has designated the Procurement and Assignment Service as one of the fifteen certifying agencies, with the Code No. 15. These procedures will affect (a) civilian interns, (b) civilian residents, (c) members of the professions on the faculties of universities and (d) members of the professions engaged in private practice or otherwise regularly engaged in an activity in war production or in support of the national health, safety or interest.

MEMBERS OF THE PROFESSIONS IN THE AGE GROUP 18 THROUGH 29

A. It is necessary at once for state chairmen to ask employers (universities, hospitals, industries and so on) to make out and submit to the state chairman's office a list, in triplicate, of members of the professions in his establishment who are in the age group 18 through 29 and who are necessary to and regularly engaged in and are indispensable and irreplaceable in an activity in war production or in support of the national health, safety or interest. This includes all those who were on Jan. 1, 1945 classified II-A or II-B. Two sets of three copies each of form 42-A (special-revised) should be submitted for each registrant.

B. Immediately on receipt of forms 42-A (special-revised) the state chairman should, if he concurs that the registrant is essential, (1) certify by signing the originals only and entering the name and Code No. 15 of the Procurement and Assignment Service as the certifying agency; (2) forward one complete set of three copies each of form 42-A (special-revised) to the registrant's local board; (3) forward to the state director of Selective Service in the state of employment the original copy of the second sheet of 42-A (special-revised), with one copy of the list; and (4) retain, for his own use, two carbon copies of form 42-A (special-revised) and the two copies of the lists.

MEMBERS OF THE PROFESSIONS IN THE AGE GROUP 30 THROUGH 33

The same procedure as outlined in A and B will be followed by members of the professions in the age group 30 through 33, with the exception that forms 42 and 42-A will be used in place of form 42-A (special-revised). Members of the professions in the age group 30 through 33 must be necessary to and regularly engaged in (but not necessarily indispensable and irreplaceable in) an activity in war production or in support of the national health, safety or interest.

MEMBERS OF THE PROFESSIONS IN THE AGE GROUP 34 THROUGH 37

The same procedures as outlined in A and B will be followed for members of the professions in the age group 34 through 37, with the exception that forms 42 and 42-A will be used in place of forms 42-A (special-revised). Members of the professions in the age group 34 through 37 must be regularly engaged in (but neither necessary to nor indispensable and irreplaceable in) an activity in war production or in the support of the national health, safety or interest.

N. B.: 1. The term "interns" as used includes all individuals serving in internships whether or not they have received their degree of doctor of medicine.

2. These procedures are not necessary for individuals who are classified by Selective Service as 4-F. However, this must not be confused with a physical disqualification on application for commission, which is an entirely different thing.

3. Students are not included in these procedures.

Hospitals and other institutions employing civilian physicians under 38 years old are urged to submit to the state chairman of the Procurement and Assignment Service the information requested.

NAVY

INTERNSHIPS AND RESIDENCY TYPE
GRADUATE TRAINING IN
NAVAL HOSPITALS

General rotating internships in naval hospitals were established in 1924. At the present time thirty-eight such hospitals have been approved by the Council on Medical Education and Hospitals of the American Medical Association for internship training on the same standards as those of civilian hospitals.

Under the accelerated program these naval internships consist of a nine months rotating service, providing all interns with three months in each of the three groups of service according to the following schedule:

1. Medicine, neuropsychiatry and clinical laboratory.
2. Surgery, urology, eye, ear, nose and throat and roentgenology.
3. Obstetrics, pediatrics and gynecology.

These internships are acceptable for credit before state boards of licensure to the same extent as similar internships in civilian hospitals.

The Professional Division of the Bureau of Medicine and Surgery, when established last year, began immediately to put into effect an extensive program for graduate medical education of the residency type in naval hospitals. These services are being reviewed by the Council on Medical Education and Hospitals of the American Medical Association for credit before the American boards certifying in the specialties and the American College of Physicians, while the facilities for surgical residencies are also being surveyed by the American College of Surgeons.

Younger medical officers whose graduate training in the specialties may have been interrupted by enlistment may thus continue their training in the formal equivalent of a residency when assigned to the special divisions of these hospitals. The general policy of the Bureau of Medicine and Surgery with regard to opportunities for graduate training in the medical specialties is to be a gradual substitution of this residency type of clinical training through duty assignments in place of the shorter and more didactic or academic "courses" which have long been available. Medical officers desiring graduate training in the specialties, especially if already partly trained, are encouraged to apply to the Bureau of Medicine and Surgery for such assignments on completion of their tours of sea duty. All of the specialties are included in this training because the Navy cares not only for naval personnel but also as far as possible for their dependents, including large numbers of obstetric, gynecologic and pediatric cases.

This program was not an innovation except as an officially recognized procedure. The inclusion of many prominent specialists in the staffs of the large naval hospitals of this country had contributed to the existing high standards of care of patients as well as providing additional opportunities for graduate work for medical officers even prior to the initiation of this formal residency program last year. Appropriate assignment of medical officers according to previous training with opportunities for further training in their chosen specialties is designed primarily to ensure constant improvement in the standards of medical care in naval activities.

NAVY AWARDS AND COMMENDATIONS

Lieutenant Commander George A. Stanbery

The Silver Star Medal was recently awarded to Lieut. Comdr. George A. Stanbery, formerly of Vandalia, Ill., "for conspicuous gallantry and intrepidity while serving as battalion medical officer with the Second Amphibian Tractor Battalion, Second Marine Division, during action against enemy Japanese forces on Tarawa Atoll, Gilbert Islands, Nov. 21-23, 1943. Realizing the urgent need for medical assistance ashore on the morning of November 21, Lieutenant Commander Stanbery personally assumed command of his landing boat and ordered it to land despite the intense, persistent machine gun and anti-boat fire which was driving all small craft back from the beach. On

landing, he immediately joined a hard pressed aid station and, working tirelessly and with complete disregard for his own safety, continually exposed himself to enemy fire in order to evacuate seriously wounded casualties onto amphibian tractors. By his splendid initiative and outstanding professional skill, Lieutenant Commander Stanbery was responsible for the saving of many lives, and his courageous efforts under extremely hazardous conditions were in keeping with the highest traditions of the United States Naval Service." Dr. Stanbery graduated from St. Louis University School of Medicine in 1927 and entered the service March 23, 1942.

Lieutenant Marion Melvin Green

The Legion of Merit was recently awarded to Lieut. Marion Melvin Green, formerly of Stockton, Calif., "for exceptionally meritorious conduct in the performance of outstanding services to the government of the United States as a medical officer prior to and during the operations against enemy Japanese forces on Tarawa Atoll, Gilbert Islands, Nov. 20 to 24, 1943. Assuming the duties of the battalion surgeon, who had been killed, Lieutenant Green efficiently and expeditiously established an aid station on one of the assault beaches and, completely disregarding his own personal safety, worked tirelessly and with expert professional skill in administering medical assistance and evacuating the wounded. By his splendid initiative, cool courage and tenacious devotion to duty under extremely hazardous conditions, Lieutenant Green undoubtedly saved the lives of many who otherwise might have perished." Dr. Green graduated from Stanford University School of Medicine, San Francisco, in 1933 and entered the service in March 1942.

Lieutenant Ralph Atkins Foster

The Silver Star Medal was recently presented to Lieut. Ralph Atkins Foster, formerly of Yakima, Wash., "for conspicuous gallantry and intrepidity while serving with a Marine raider battalion during an engagement with enemy Japanese forces on Bougainville Island, Solomon Islands, Nov. 1, 1943. Landing on the beach among the first assault waves, Lieutenant (then Lieutenant, Junior Grade) Foster immediately went to the aid of men wounded by a hostile artillery shell which exploded in their landing craft. In full view of the enemy he worked tirelessly for more than an hour, caring for the injured while the Japanese kept up a continuous fire and grenades struck within 10 yards of his post. With utter disregard for his own safety he steadfastly remained in his hazardous position until he had treated all of the wounded, thereby contributing to the saving of many lives which otherwise might have been lost. His cool courage, outstanding professional skill and unswerving devotion to duty were in keeping with the highest traditions of the United States Naval Service." Dr. Foster graduated from the University of Oregon Medical School, Portland, in 1938 and entered the service Nov. 15, 1942.

Lieutenant Commander Robert L. Griffith

For exceptional efficiency as senior medical officer in directing his medical staff aboard an attack transport during the capture of Japanese held Saipan and Tinian Islands, the Bronze Star was recently awarded to Lieut. Comdr. Robert L. Griffith of the Public Health Service of the Federal Security Agency. The citation read that, "working zealously with the limited facilities available, Lieutenant Commander Griffith was responsible for the prompt and skilled treatment of more than a thousand casualties taken aboard during the combined operations. His exceptional efficiency in directing his medical staff throughout long hours without rest was a contributing factor in saving the lives of men wounded in combat and reflects the greatest credit on the high professional integrity of Commander Griffith and his gallant devotion to the fulfillment of a vital mission." Dr. Griffith graduated from Harvard Medical School, Boston, in 1936. He received a commission as assistant surgeon in the regular corps of the Public Health Service in 1939. Prior to his assignment to the overseas theater of war with the U. S. Coast Guard, Dr. Griffith was stationed at the Marine Hospital, New Orleans.

MISCELLANEOUS

IMMUNE SERUM GLOBULIN

Immune serum globulin (gamma globulin) for the prophylaxis, modification and treatment of measles is now available for the civilian population through an appropriation by the American Red Cross as announced by Mr. Basil O'Connor, chairman of the Central Committee of the American Red Cross. This action is in keeping with the policy of the American Red Cross to return to the American people, as far as practicable, any useful blood derivatives accumulated in excess of military needs as a result of its blood donor program.

The serum globulin will be supplied without charge to state and territorial health departments or local health departments where biologic products are not supplied by the state, provided the globulin will be distributed without charge to physicians, hospitals and clinics, and provided it will be administered in accordance with established standards and without any charge to the patient for the globulin.

As announced in the July 1, 1944 issue of *THE JOURNAL*, health departments assumed the costs of processing and distributing immune serum globulin. Under the new plan the entire cost of processing and distributing the product is now borne by the American Red Cross.

The crude serum globulin fraction thus made available is derived as a by-product from processing serum albumin under Navy control. It has been declared surplus and assigned by the Navy to the American Red Cross for distribution.

Eligible health agencies are being requested to place their orders promptly with National Headquarters, American Red Cross, Washington, D. C., attention of Dr. G. Foard McGinnes, National Medical Director.

WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

California

Birmingham General Hospital, Van Nuys: Chemotherapy, Dr. Clinton Thienes and Lieut. Comdr. Charles Bingham, March 14.

U. S. Naval Air Training Station, San Diego: Internal Derangements of the Knee Joint, Dr. John Wilson, March 16.

Station Hospital, Camp Cooke: Fractures About the Wrist and Ankle, Lieut. Col. Richard B. McGovney and Dr. Samuel Mathews, March 21.

Hoff General Hospital, Santa Barbara: Fractures About the Wrist and Ankle, Lieut. Col. Richard B. McGovney and Dr. Samuel Mathews, March 21.

U. S. Naval Hospital, Oceanside: Thoracic Surgery, Dr. John Jones and Lieut. Comdr. J. E. Dailey, March 22.

Illinois

Gardiner General Hospital, Chicago: Dermatologic Diseases, Drs. Stephen Rothman and E. A. Oliver, March 14; Sequelae of Head Injuries, Dr. Paul Bucy, March 23; Burns and Plastic Surgery, Drs. Wayne B. Slaughter and Paul Hausmann, March 28.

Station Hospital, Fort Sheridan: Malignancies in the Army Age Group—Medical X-Ray and Surgical Diagnosis and Treatment, Drs. Alexander Brunschwig and James P. Simonds, March 15; Endocrinology, Dr. Willard O. Thompson, March 29.

Vaughan General Hospital, Hines: Wound Healing and Tendon Surgery, Drs. Hilger P. Jenkins and Alfred Rasmussen, March 14; Mental Hygiene and the Prevention of Neuroses in War, Capt. Charles O. Sturdevant, March 28.

U. S. Naval Hospital, Great Lakes: The Safety of Primary Resection of the Colon, with a Discussion of the Preoperative and Postoperative Management, Dr. Karl A. Meyer, March 20.

Mayo General Hospital, Galesburg: Virus and Rickettsial Diseases—Medical and Neurologic Diseases and Treatment, Drs. Francis Gordon and J. E. Salk, March 14; Psychosomatic Medicine, Dr. Francis J. Gerty, March 28.

Station Hospital, Camp Ellis: Thrombosis, Thrombophlebitis and Anticoagulants in Less Common Peripheral Vascular Diseases, Drs. Geza de Takats and Armand J. Quick, March 14;

Peptic Ulcer, Gallbladder and Liver Diseases, Drs. Lowell D. Snorf and John T. Reynolds, March 28.

Regional Hospital, Chanute Field, Rantoul: Laboratory Diagnosis and Its Relationship to Medical and Surgical Treatment, Drs. Steven O. Schwartz and William S. Hoffman, March 14; High Blood Pressure, Drs. Adrien H. Verbrugghen and Louis N. Katz, March 28.

Indiana

Billings General Hospital, Fort Benjamin Harrison: Brain and Spinal Cord Injuries, Drs. J. K. Berman and Robert L. Glass, March 14; Conditions Affecting Glucose Metabolism, Drs. Franklin B. Peek and C. L. Rudesill, March 28.

Wakeman General Hospital, Camp Atterbury: Plexus and Peripheral Nerve Injuries, Capt. Irving J. Spiegel, March 14; Diseases of the Intestinal Tract, Medical and Surgical Diagnosis and Care, Drs. William Foster Montgomery and Rollin H. Moser, March 28.

Ohio

A. A. F. Regional Station Hospital, Patterson Field, Fairfield, Ohio: The Diagnosis and Treatment of the Common Arthritides, Dr. Russell Haden, March 21.

Crile General Hospital, Cleveland: Problems in the Diagnosis and Management of Coronary Artery Disease, Dr. R. W. Scott, March 27.

Virginia

Woodrow Wilson General Hospital, Staunton: Infectious Hepatitis, Col. Marian H. Baker, March 14; Relation of Dental Focal Infection to Disease, Lieut. George L. Vandewall, March 28.

Wisconsin

Station Hospital, Camp McCoy: Head and Spine Injuries, Dr. Theodore C. Erickson, March 14; Allergic States, Dr. Theodore L. Squier, March 28.

Station Hospital, Truax Field: Arthritis, Dr. Milton C. Borman, March 14; Peripheral Vascular Diseases, Dr. Geza de Takats, March 28.

HOSPITALS NEEDING INTERNS
AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in *THE JOURNAL*, February 24, page 467)

COLORADO

St. Anthony Hospital, Denver. Capacity, 230; admissions, 6,602. Sister M. Mechtildis, R.N., Superintendent (2 interns).

GEORGIA

Emory University Hospital, Emory University. Capacity, 267; admissions, 8,064. Dr. R. M. Paty Jr., Medical Director (resident—medicine, July 1, disqualified for military service).

ILLINOIS

St. Elizabeth Hospital, Chicago. Capacity, 342; admissions, 8,180. Sister M. Vetusa, R.N., Superintendent (interns). Women and Children's Hospital, Chicago. Capacity, 155; admissions, 3,538. Mrs. Edna Nelson, R.N., Superintendent (woman intern, now).

INDIANA

St. Catherine Hospital, East Chicago. Capacity, 324; admissions, 6,891. Sister M. Cordula, R.N., Superior (3 interns, July 1).

NEBRASKA

St. Elizabeth Hospital, Lincoln. Capacity, 230; admissions, 6,433. Dr. Arthur L. Smith, Medical Director (interns).

NEW YORK

Lincrin Hospital, New York. Capacity, 469; admissions, 9,516. Dr. Herman E. Bauer, Medical Superintendent (4 interns, July 1).

OHIO

Jewish Hospital, Cincinnati. Capacity, 309; admissions, 7,996. Mr. Van C. Adams, Superintendent (resident—surgery, July 1, disqualified for military service).

Lakewood Hospital, Lakewood. Capacity, 157; admissions, 4,276. Dr. R. B. Crawford, Superintendent (interns).

St. Rita's Hospital, Lima. Capacity, 185; admissions, 5,640. Sister Mary Aquin, R.N., Superintendent (intern, July 1).

Riverside Hospital, Toledo. Capacity, 128; admissions, 4,286. Mr. Norman L. Losh, Director (2 interns, 1 resident, disqualified for military service).

ORGANIZATION SECTION

DEFERMENT OF MEDICAL AND PREMEDICAL STUDENTS

The following bill, S 637, was introduced February 26 in the Senate of the United States by Mr. Ellender and referred to the Committee on Military Affairs

A Bill

To authorize the release of persons from active military service, and the deferment of persons from military service, in order to aid in making possible the education and training of physicians and dentists to meet essential needs

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, to the extent that the President deems to be (1) feasible, (2) compatible with military operations, and (3) necessary or desirable in order to make possible the education and training as physicians and dentists of as many persons as are necessary to provide the minimum number of medical doctors and dentists required to meet the essential needs of the civilian population (especially in rural areas) and the armed forces for medical and dental services in the future the President is authorized to provide for the release from active duty in the armed forces of men who have completed more than one year of honorable service in such forces during the present war and who have satisfactorily completed a substantial portion of the medical, dental, premedical or predental education and training necessary to qualify them as physicians or dentists, in order to enable such persons to pursue further such education and training. The release of any person from active duty for the purposes of this section may be conditioned upon his acceptance by an accredited school and the pursuit of such education and training in a satisfactory manner

Sec 2 Section 5 of the Selective Training and Service Act of 1940, as amended, is hereby amended by adding at the end thereof the following new subsection

"(n) In order to make possible the education and training as physicians or dentists of as many persons as are necessary to provide the minimum number of medical doctors and dentists required to meet the essential needs of the civilian population (especially in rural areas) and the armed forces for medical or dental services in the future, the President shall under such rules and regulations as he may prescribe, provide for the deferment from training and service under this act in the land and naval forces of the United States of those men who are found in accordance with section 10 (a) (2) to be enrolled in the national medical and dental education program. The President shall provide for the enrollment, under such rules and regulations as he may prescribe, in a national medical and dental education program (hereinafter referred to as the 'program') of such persons as he deems necessary to be enrolled in such program in order that they may be deferred under this subsection from training and service under this act, subject to the following limitations

"(1) (A) The number of men enrolled in the program for the purpose of permitting them to pursue first year premedical education and training shall not exceed eight thousand at any one time

"(B) The number of men enrolled in the program for the purpose of permitting them to pursue first year predental education and training shall not exceed three thousand and five hundred at any one time

"(2) (A) The number of men enrolled in the program for the purpose of permitting them to pursue second year premedical education and training shall not exceed eight thousand at any one time prior to the end of the third month of the academic

year and shall not exceed four thousand five hundred at any one time after the end of the third month of the academic year, and after the end of such third month shall not include any one who has not been accepted for admission to the earliest subsequent entering class of an accredited medical school following the satisfactory completion of such second year premedical education and training

"(B) The number of men enrolled in the program for the purpose of permitting them to pursue second year predental education and training shall not exceed three thousand five hundred at any one time prior to the end of the third month of the academic year and shall not exceed one thousand seven hundred and fifty at any one time after the end of the third month of the academic year, and after the end of such third month shall not include any one who has not been accepted for admission to the earliest subsequent entering class of an accredited dental school following the satisfactory completion of such second year predental education and training

"(3) No man shall be enrolled in the program for the purpose of permitting him to pursue premedical or predental education and training for more than two years

"(4) (A) The number of men enrolled in the program for the purpose of permitting them to pursue first year, second year, third year or fourth year medical education and training shall not exceed four thousand five hundred in each of such classes at any one time

"(B) The number of men enrolled in the program for the purpose of permitting them to pursue first year, second year, third year or fourth year dental education and training shall not exceed one thousand seven hundred and fifty in each of such classes at any one time"

In determining the number of men who may be enrolled in the program, the President shall take into consideration and make due allowances for the number of physicians or dentists who may be obtained through the education and training of other persons not enrolled in the program, including veterans of the armed forces, women and persons not qualified for military service. The limitation on the number of men who may be enrolled in the program shall not be deemed to be a limitation on the total number of students who may be enrolled in medical, dental, premedical or predental schools but shall be deemed to be a limitation only on the number of men who may be deferred under this subsection who shall be in addition to students who may be obtained from other sources. Persons shall not be enrolled in the program for the purpose of permitting them to pursue medical or dental education and training at any schools except medical and dental schools whose graduates are acceptable to the armed forces for commissioning as medical doctors or dentists. The number of men who may be enrolled in the program for the purpose of permitting them to pursue each of the two respective years of premedical or predental education and training shall be allocated by the President among the several states on the basis of population as determined by the 1940 census. The men to be enrolled in the program from each state for the purpose of permitting them to pursue such education and training shall be selected from among applicants within such state, in such manner as the President may prescribe. In making such selections, representatives of accredited schools which offer full time medical, dental, premedical or predental courses of instruction shall be consulted and their services may be utilized. No man who fails to make satisfactory progress in pursuing his education and training shall be permitted to continue to be enrolled in the program

Council on Medical Service and Public Relations

THE ATLANTA CONFERENCE

Senator Claude Pepper of Florida was the guest and principal speaker at the fourth regional conference of the Council on Medical Service and Public Relations, which was held at Atlanta, Ga., February 23. Representatives from Alabama, Georgia, Mississippi, North Carolina, South Carolina and Tennessee attended the conference. The delegates from Florida and Louisiana were unable to be present.

Senator Pepper, who was in Atlanta attending another meeting but took time to address the conference, was introduced by Dr. James E. Paullin, Past President of the American Medical Association and a member of the Council. "I have explained to Senator Pepper that this is a conference composed of men who are extremely interested in the problems of health and medical care and that we greatly appreciate having Senator Pepper, who is likewise interested in these problems, as our guest" Dr. Paullin said as conference chairman.

Senator Pepper's Remarks

Our committee was authorized by a senate resolution to constitute itself as a Subcommittee on Education and Labor. Not only was the committee recently reconstituted by a Senate resolution but Senator Murray, chairman of the full committee in which all health matters appear, set up a subcommittee to work on all problems pertaining to health. I recommended to Senator Murray that we enlarge our special committee to include nine altogether. The one first set up consisted of Democrats Thomas of Utah, Tunnell of Delaware and myself as chairman. The other members are Republican Wherry of Nebraska and a Progressive, La Follette of Wisconsin. Recently Senator Wherry requested to be permitted to resign from the committee. Replacing him was Republican Smith of New Jersey. I recommended to Senator Murray that he add four more senators. Now he appointed himself, Senator Murray of Montana and Senator Hill of Alabama, co-author of the hospital bill sponsored by the Hospital Association, hearings on which are to begin next Monday. Then two Republicans were added, Senator Taft of Ohio and Senator Aiken of Vermont. The committee now consists of five Democrats, three Republicans and one Progressive, La Follette of Wisconsin. I recommended to Senator Murray that he appoint the same Senators as were on the special Senate committee, which has a small amount of funds and power to carry on investigations, and that the same be named a permanent Senate committee. We have recently obtained from Senator George permission to enlarge our inquiry and let this committee cover the field of the health of veterans and health facilities rendered by veterans. Senator George, of course reserving the right to legislate on his Committee on Finance, gave us permission to go ahead with our study and to publish the report which we have already prepared. This will be published on February 26 as an inquiry into the health of veterans. When I started into this subject, some thought it was an effort on the part of Pepper of Florida to inflict socialized medicine on the country. I reiterate that I have never favored socialized medicine. I live in the field of politics and am not angry with any of my doctor friends who misinterpreted my views. I have no desire to impair the integrity of the profession or the right of the patient to make a free choice of doctor, dentist or nurse or anything else we think of as Americanism. I think we are making real progress in this field. I am very happy to say that when our report was published the first person to contact me was Dr. Fishbein. He wrote me a letter commending the report, published it in full in *THE JOURNAL* and wrote an editorial complimenting the work and the report. From all over the country, if I may say so, we have had generous and considerate comments. The other night in New York we had a discussion of public health and we had a forum on the *New York Times*. Michael Davis, Kingsley Roberts, Kaempfert, Fishbein and I discussed the subject. Before that time Dr. Fishbein and I had luncheon. A few days ago Dr. A. W. Richards, whom you will know as a member of

the Committee on Medical Research of the National Research Council, and Dr. Palmer from New York, working on a report under Dr. Richards, were in contact with me. Whenever I could I have urged representatives of medical associations to be present. We have pleasant contact with foundations interested in research, and many individuals like Mr. Albert Lasker and others have been working with us. I believe it is not unfair to say that for the first time we have a Congressional committee which is in a position to be a coordinating committee, and we should get something constructive from it.

Dr. Vannevar Bush is making a study under the direction of the President on the question of continuation of publicly financed medical research. The President has said that as soon as the report is ready it will be made available to us and other Congressional groups interested in it. Dr. Fishbein and Dr. Lewis Weed the other day agreed that there was no reason why we could not all get together in agreement as to where funds will be given out. Drs. Palmer, Richards and others are trying to work out something that the President will consider; some sort of agency properly constituted, a certain number of doctors, professors, foundation people, public men and chemists; at least some sort of an agency to allocate a sizable amount of public money to the encouragement of medical research wherever such encouragement may be given. We don't want to load the committee down with research not properly related to medical research. It should be concerned only with those things scientifically and directly connected with public health. There is no reason why even in the next few weeks, certainly the next few months, we may not be able to get together the profession, various agencies and the President on a medical research program, or at least on personnel who will aid a program or with the provision of money to give aid to such a program.

The Committee on Education and Labor, of which I am a member, will start hearings on the Hill-Burton bill for the construction of a national system of hospital facilities. Generally speaking, it follows the plan proposed by Surgeon General Parran and evolving over the past several years, namely to have what might be called a health center in rural areas, rural hospitals, of course more complete than health centers, district hospitals and then a base hospital, not only a hospital but a teaching place as well. My subcommittee will take the bill as soon as the hearings are finished and study it and make such amendments as we think proper. We may recommend additional hearings and extend it a few days.

The next great field is the provision of additional medical (including dental) personnel. I think we are agreed that we should give adequate dental service to the people. Dental service is now available to 30 per cent. It should be given to 90 or 95 per cent. That will take more dentists. It will give more honorable occupation to men and boys and girls in the country. More technical schools are needed, and the rendition of more services may be the solution of employment of people. If we give people in the country the medical care which they should have the number of the profession will be too small. At least we may give a doctor enough leisure to do as he wishes and also make it possible to restrict his activity as he grows older to what he wants to do. We have in our report recommended that there should be scholarships or loans for people qualified to get medical education. We are not trying to lower medical standards; we are trying to raise them. I am a person of vocational training; others should be. We worked in power plants, waited on tables and the like and borrowed money from the loan foundation. I would not be grateful if I did not try to open the doors of opportunity to more who have aptitudes and who would render service. We don't want to flood the medical profession with too many doctors. If any one wants to establish an overall figure which we should not exceed I would not want to go beyond that. I do think we can aid boys and girls who have aptitudes for the profession to get into the profession by scholarships and loan funds. Women should be admitted to professions on equality with men. There is a difference of opinion on this. I think it is a part of our evolutionary concept that women should enter medicine as well as men. But when you get ample hospital facilities, when you get all the doctors, dentists and nurses you need, we must still make the facilities and services available to the American people in a correct way.

That is the problem. And we must do this without lowering standards of the profession. We want to raise the standard, not lower it.

We have the Wagner-Murray-Dingell bill, and that bill contemplates compulsory insurance. It would undoubtedly cover many people and bring them into an insurance scheme and provide vast quantities of funds not now available for these facilities. That is compulsory in character. I am not quarreling with the profession that seems to be against the bill. They feel that the ill of it will exceed the good and we want a directive from this point. Only a few claim that the present system is adequate for every one. My problem is to find the answer between the present systems. There is the feeling that we are to bring conflicting opinions together.

I started off with the idea that first I want to preserve the system of voluntary membership and payment. If you are going to make the program voluntary in character and if it is going to be available to a great amount of persons, payment must be low. Twenty-one per cent of all the American people, of families in the United States, have an annual income of less than \$1,000 per family. Twenty-nine per cent of all the families in 1942 had an annual income between one and two thousand dollars. Twenty per cent of all our families had an income between two and three thousand dollars, 20 per cent between three and five thousand dollars, 10 per cent in excess of five thousand dollars. Only 10 per cent have incomes in excess of five thousand dollars. Every one here has more than ten thousand dollars. We all realize how hard it is to get along with our incomes and live according to a decent way of living. You are practicing medicine for a livelihood. I don't think it is put on the doctor to give away his services. I think that if there is going to be a donation, groceries and legal aid should be given too. If you do anything other than that you are bound to charge some one else more or lose out.

I have been thinking in terms of building the hospitals through a plan sponsored by the hospital associations and councils. When we get enough hospitals and doctors I think it should be a plan of insurance to which membership is open on a voluntary basis, each member paying either a fixed amount or a graduated amount according to income. It might be determined by income taxes paid, in order to have some standard. We might have everybody pay a certain amount of money to justify having the same system for the rich and poor alike. The difference between the total receipts of the plan and the total cost of operating the plan would be made up by federal and state subsidies. The disparity in the long run would not be as great as the first way. It is more consistent with our idea that there should be equality between what a man pays and what he can pay. A man paying an income tax on less than \$500 would pay 50 cents a month for each member of his family and himself. A man paying taxes on an annual income as much as one thousand dollars would pay a dollar a month. Next scale on up. We might get on up to where a well to do man would perhaps pay ten dollars a month per person. He might prefer to do it that way rather than go to his own doctor or private hospital. It still preserves the patient's choice of hospital, doctor, nurse to a considerable degree by giving a rich man the right to go to his own doctor and let that doctor turn in his bill to the association. If the association and doctor want to work out a reasonable plan he might charge a little less than he would ordinarily charge. I don't know. I am just thinking out loud. I am thinking of a statewide association operated under the supervision of a statewide council created by a state legislature and appointed by the governor properly constituted. I had in mind the statewide plan, because if you set up a little association down here in the county, sparsely populated, the doctors won't go there and practice. It would be a losing organization. My concept is to make the state the basis. I would like an effective state council with a federal council aiding to work out the necessary arrangements.

What we contemplate is cooperation between state councils and federal councils by which the states are constantly experimenting in this field, working out new techniques and always having a certain amount of latitude, maybe constantly recommending to the federal council plans and programs to be worked out and getting federal aid. If you had the state as a basis in setting up insurance schemes, deficiencies between income and

disbursement (provision of physical facilities) not part of outlet but just operation costs would be made up by subsidies. You can't do it all at one time. You can't start any of the construction before the end of the war. I don't know what the amount should be. I don't know how it should be graduated. I don't know how to integrate the plan to include Blue Cross schemes and private insurance schemes which insure their workers. I do know that a plan that includes only the worker and not his family is not a good plan.

There must be correlation between civilian and veterans' plans. The veterans' plan has already authorized five hundred million dollars for construction of hospitals. Many believe that the Veterans Administration has not been able to give the best medical service to the veterans. Perhaps not the best doctors have come in, maybe for other reasons. A lot of persons think the Veterans Administration has not given the maximum quality to the veterans. The veterans have generally rested all of their program under one head and treated all their men in veterans' hospitals. But it is a local problem. Many individual men will have to leave their families and go a long ways to get into hospitals. We have committed ourselves to let every veteran go to veterans' hospitals not only for service connected disabilities but for all other services necessary where not able to procure it elsewhere. For all practical purposes the United States government has underwritten medical service and hospital facilities for every American veteran. This will mean before we get through probably fifteen million persons. We got into it because we saw the necessary overlapping of medical and hospital program with the veterans' program. We began to wonder about the economy to set up a program for veterans detached from civilian personnel. We have suggested in our tentative report to be out on the 26th that the Veterans Administration consider aiding us in the provision of adequate hospital and medical service in civilian population rather than only for veterans. I am inclined to think there is something in this.

We are entering on a period when the public and the veterans are going to demand from us all hospitals, doctors, dental and nursing facilities and services. In the next few weeks we are actually going to put something down on paper. The staff is to have a study of every plan they know of in the next few days. The Blue Cross plans have done splendid work in the field and are getting down to a complete coverage program. Parran and I had lunch together; he pointed out that he was not quite sure if we should approach the people telling them more or less what we have done, such as in tuberculosis, venereal disease program, hospital program, nursing program, in the hope that we might have covered a part of it and should shoot at something comprehensive in character. I wanted to acquaint you with a little of what we are doing and the point of view from which we are approaching it. We have a committee made up of all types and Democrats and Republicans, Liberals and Conservatives. We work through all agencies to accomplish something we shall all be proud of as a contribution to public health.

General Discussion

The program for the morning session of the conference was composed of talks and discussions led by representatives of the various departments and bureaus of the American Medical Association. The speakers were Mr. J. W. Holloway Jr., director of the Bureau of Legal Medicine and Legislation, Dr. J. S. Lawrence, director of the Washington Office of the Council, and Lieut. Col. Harold C. Luth, liaison officer. Dr. Victor Johnson, Secretary of the Council on Medical Education and Hospitals, talked on the problems confronting the medical profession as found by the Council. Dr. Johnson said "The war has interjected a great many difficulties into our entire system of medical education, commencing with the college and premedical course and going through the many stages including the advanced residents' training. There are serious problems introduced at every point. . . . It is gratifying that hospitals are planning very carefully through committees which are working at the problem of providing additional training for the physicians returning from the war. Considerable expansion of residencies and fellowships is under way in approved hospitals. Large key hospitals are integrating their programs with other institutions. Interhospital cooperation has been very gratifying to us."

Medical Legislation

DISTRICT OF COLUMBIA

Bill Introduced.—H. R. 2424, introduced by Representative McMillan of South Carolina, proposes to establish in the Health Department of the government of the District of Columbia the position of Assistant Health Officer in Charge of Tuberculosis and to impose on him the duty to formulate and coordinate general policies relating to tuberculosis control, to appoint and fix the compensation of a supervisor of tuberculosis clinics, to allocate, with respect to race and sex, all tuberculosis beds maintained by the District of Columbia, to act as liaison officer between the Health Officer and various units dealing with tuberculosis control, and to review all estimates of appropriations for activities coming under his jurisdiction prior to the submission of such estimates to the Bureau of the Budget.

MEDICAL BILLS IN CONGRESS

Change in Status.—The House Committee on Ways and Means has ordered favorably reported H. R. 2348, to bring within the purview of the federal narcotic laws "any drug (as defined in the Federal Food, Drug and Cosmetic Act) found by the Secretary of the Treasury, after due notice and opportunity for public hearing, to have an addiction-forming or addiction-sustaining liability similar to morphine or cocaine, and declared by the Secretary to have been so found."

Bills Introduced.—S. 619, introduced by Senator George, Georgia, for himself and Senator Thomas, Utah, Senator Hill, Alabama, Senator LaFollette, Wisconsin, Senator Aiken, Vermont, and Senator Ellender, Louisiana, provides for vocational education and retraining, including part-time training and work-experience programs for the occupational adjustment and readjustment of youth and adults, including persons demobilized from essential war work or from the armed services. S. 652, introduced by Senator Maybank, South Carolina, and H. R. 2447, introduced by Representative Richards, South Carolina, provide for the issuance of death certificates in case of persons dying in the military or naval forces. S. 637, introduced by Senator Ellender, Louisiana, proposes to authorize the release of persons from active military service, and the deferment of persons from military service, in order to aid in making possible the education and training of physicians and dentists to meet essential needs. H. R. 2346, introduced by Representative Peterson, Florida, provides aid in the readjustment in civilian life of those persons who rendered war service in the United States merchant marine during World War II and to provide aid for the families of deceased war-service merchant seamen. This bill proposes to confer on war-service merchant seamen the benefits contemplated by the G. I. Bill of Rights and in addition, among other things, provides that any such seamen shall be entitled to medical, surgical and dental treatment and hospitalization without charge at hospitals and other stations of the Public Health Service if he is (1) in need of care and treatment for a disability with respect to which the disability endorsement on his certificate of maritime war service was made or (2) unable to defray the expenses of necessary care and treatment. The bill, too, authorizes the furnishing of medical advice and outpatient treatment by the United States Public Health Service to dependent members of the family of a disabled or deceased war-service seaman at such per diem cost as may be prescribed from time to time by the President for the hospitalization of dependents of Naval and Marine Corps personnel at any naval hospital. H. R. 2403, introduced by Representative Curtis, Nebraska, proposes to impose an occupational excise tax on certain dealers in peyote, to impose a transfer tax on certain dealings in peyote and to safeguard the revenue therefrom by registry and recording. The term "peyote" is defined to mean "all parts, including the seeds, of the plant *Lophophora williamsii* (Lem.) Coulter, and the plant *Lophophora lewinnii* Thompson, whether growing or not; any alkaloid extracted from any such part; and any compound, manufacture,

salt, derivative, mixture or preparation of any such part or alkaloid." H. R. 2417, introduced by Representative Gathings, Arkansas, proposes to authorize the completion by the use of Lanham Act funds of hospital projects initiated by the Works Progress Administration and the Work Projects Administration. H. R. 2422, introduced by Representative Lynch, New York, proposes to provide for a system of old age and survivors' insurance for employees of religious, charitable, educational and certain other organizations. H. R. 2449, introduced by Representative Peterson, Florida, provides that any person who served in the United States merchant marine between April 6, 1917 and July 2, 1921 and who received a certificate of honorable discharge from the Sea Training Bureau of the United States Shipping Board shall be entitled to medical, surgical and dental treatment without charge at hospitals and other stations of the Public Health Service and may receive such care and treatment at the expense of the Public Health Service from public or private medical or hospital facilities other than those of the service when authorized by the officer in charge of the hospital or station of the Public Health Service at which application for care and treatment is made.

STATE LEGISLATION

Arizona

Bill Introduced.—H. 167, to amend the naturopathic practice act, proposes to extend the scope of a license to practice naturopathy by permitting the holder thereof to use biochemistry, pharmacotherapy, minor surgery and phytotherapy.

Arkansas

Bill Introduced.—S. 271 proposes to create a state cancer commission to be composed of the governor, the chairman of the Committee on Cancer Control of the Arkansas Medical Society and three other persons to be appointed by the governor, two of whom shall be members of the Arkansas Medical Society and the third member not to be a physician. The commission is to conduct such cancer clinics in such places as it deems proper and engage in a program of cancer education.

Connecticut

Bill Introduced.—H. 317 proposes that the law prohibiting the prescribing and use of contraceptives shall not be construed to prevent a licensed physician from prescribing a contraceptive when in the opinion of the physician pregnancy would endanger the life or health of the woman.

Illinois

Bill Introduced.—H. 163, to amend the narcotic drug act, proposes so to define narcotic drugs as to include isonipecaine.

Indiana

Bill Introduced.—H. 129 proposes to make any physician eligible to be selected and to serve as a member of the governing board of any hospital supported in whole or in part by public funds on the same terms and conditions as pertain to any other person to be selected for such service.

Iowa

Bill Introduced.—H. 319 proposes to require a hospital in which a child is born to take immediately after birth prints of each foot and to furnish copies thereof to the department of public safety. If a child is born elsewhere it is to be the duty of the attending physician, midwife or person in charge to notify the department of the birth and to execute such forms as may be required by the department. The department in such circumstances apparently is to cause prints of the feet to be taken.

Kansas

Bills Introduced.—S. 211 and H. 220 propose to authorize cities of the second class having a population of from 5,000 to 8,000 and located in a county having a population of from 11,000 to 14,000 to issue bonds up to \$375,000 to build and equip a

hospital. S. 248 and H. 267 propose to prohibit the operation of a hospital, sanatorium, rest home, nursing home or a related institution unless licensed by the state board of health. H. 218 proposes to enact a separate naturopathic practice act and to create an independent board of naturopathic examiners. The bill proposes to define naturopathy as "the art, science and philosophy of natural healing as taught in recognized schools or colleges or schools of natural healing but shall not include the practice of medicine, surgery, osteopathy, chiropractic or Christian science."

Maine

Bill Introduced.—S. 216 proposes to require a physician attending a pregnant woman to take or cause to be taken a sample of her blood and to submit that sample for a standard serologic test for syphilis to an approved laboratory. The present law requires the physician to do this only if the woman consents.

Maryland

Bill Introduced.—S. 416 proposes to repeal the present statutory provisions relating to the practice of osteopathy and to enact in their stead an entirely new osteopathic practice act under the terms of which osteopaths would be authorized "to practice osteopathy in all its branches, which shall include the right to practice operative surgery with instruments and obstetrics, to administer anesthetics, antiseptics, narcotics and biologics, to sign birth, health and death certificates, and to perform such diagnostic and therapeutic procedures as are taught and practiced in the legally incorporated colleges of osteopathy of good repute." The present law specifically states that the license granted an osteopath authorizes him to practice by manipulation only.

Massachusetts

Bill Introduced.—S. 491 proposes to require the state to furnish medical care to recipients of old age assistance. Such recipient is entitled to the services of a physician of his own choice.

Michigan

Bill Introduced.—H. 182 proposes to prohibit the operation of a hospital, sanatorium, rest home, nursing home, infirmary or other similar institution without a license from the state department of health.

Minnesota

Bills Introduced.—S. 370 and H. 458 propose so to amend the narcotic drug act as to define the term "narcotic drugs" to include isonipecaine. S. 669 proposes to authorize the organization and operation of nonprofit medical care corporations to provide nonprofit medical care plans under which medical care is provided at the expense of the corporation to subscribers to the plan.

Nevada

Bills Introduced.—A. 62 proposes to prohibit the operation of a maternity hospital or maternity home unless licensed by the state board of health. A. 117, to amend the chiropractic practice act, proposes to define chiropractic "to mean the practice of chiropractic as taught in Chiropractic schools or colleges; and also the use of all necessary electrical, mechanical and hygienic and sanitary measures incident to the care of the body, including the science of palpating and adjusting the articulations of the human spinal column by hand."

New York

Bills Introduced.—S. 1028 proposes to prohibit scientific experiments or investigations on a living dog. S. 1130 proposes to make it the duty of the appropriate medical inspector to examine each public school pupil for symptoms of tuberculosis at least once a year.

New Mexico

Bills Introduced.—H. 195, to amend the medical practice act, proposes to require all licentiates of the board of medical examiners to register annually in November with the board and at that time to pay an annual registration fee of \$2. H. 251 proposes to prohibit the employment in a public or private

school of any person who has any communicable disease in a transmissible form. All applicants for any such position must submit a certificate from a licensed doctor of medicine that the applicant is free from any such disease. Such a certificate is to be required annually thereafter of employees.

North Carolina

Bill Introduced.—S. 178 proposes to authorize the establishment and operation of the North Carolina Hospital for Treatment of Spastic Children.

Ohio

Bill Introduced.—S. 90 proposes to require every physician attending a woman for conditions relating to pregnancy to take or cause to be taken a sample of her blood at the time of the first examination or within ten days thereafter and to submit that sample to an approved laboratory for a standard serologic test for syphilis.

Oregon

Bills Introduced.—S. 203 proposes so to amend the narcotic drug act as to define "narcotic drugs" to include isonipecaine. H. 367 proposes to require the state board of health to survey the location, size and character of existing hospitals and health centers and to evaluate the sufficiency of those existing facilities to supply the necessary physical facilities for furnishing adequate service. H. 372 proposes to make it unlawful to manufacture, sell or possess for the purpose of sale any live organism vaccine or any viable animal disease control vaccine without possessing an appropriate license from the department of agriculture.

Pennsylvania

Bills Introduced.—S. 307 proposes to prohibit the performance of an operation in a hospital or other place in which operations are performed without first requiring a preoperative study and diagnosis to be had and a record thereof to be made. The provisions of the bill, however, are not to apply to an emergency operation or oral surgery. The preoperative study referred to in the bill is to include a complete history of the case and the report of a thorough physical examination including examinations of the heart, blood vessels, blood, lungs and urine. H. 416 proposes to require that on or before the third anniversary of the termination of present hostilities every hospital be equipped with electric light fire warning systems. H. 474 proposes to authorize any state agency examining and licensing applicants for licenses to practice a profession or vocation to grant such a license without examination to a discharged member of the military or naval forces of the United States. H. 638 proposes to authorize the sexual sterilization of certain socially inadequate inmates of state institutions.

Tennessee

Bills Introduced.—S. 525 and H. 712 propose to authorize the establishment of a nonprofit hospital corporation to operate nonprofit hospital service plans.

Texas

Bill Introduced.—H. 438 proposes to prohibit the retail sale or other distribution of barbital except on the written prescription of a licensed physician, dentist or veterinarian.

Utah

Bills Introduced.—S. 202 proposes to authorize cities and towns to operate hospitals and to join with other cities, towns and counties in the construction and operation of such hospitals. S. 234 proposes to designate the state department of health as the state agency to receive funds which may be made available from federal agencies for the prevention and control of communicable diseases and for surveying, planning, constructing and operating hospitals, public health centers and related facilities. H. 213 proposes that any person ill with tuberculosis who neglects to obey the instructions of the state or local health board or officer in matters relating to the protection of others against the disease shall be placed under quarantine. H. 234 proposes to require of a food handler an annual medical examination for tuberculosis, venereal disease or any communicable or enteric disease.

Donald, past president of the Wayne County Medical Society and one of the founders of the lectureship foundation committee, at the society headquarters, 4421 Woodward Avenue, Detroit 1.

James Bechtel Resigns.—Mr. James Bechtel, who has been executive secretary of the Wayne County Medical Society since 1935, has resigned, effective February 1. Miss Else Kolhede, formerly in charge of offices of the county society, has been named to succeed him. Mr. Bechtel will be associated with Mr. Jerry Totzka, formerly Michigan director of drugs and drug stores, in the Drug Industries Company of Detroit. The principal product at the present time of the Drug Industries Company is a line of prescription vitamins available to the public only on the prescription of a physician, it is reported.

Lectures on Chemotherapy.—The department of chemistry in the college of liberal arts, Wayne University, Detroit, opened a series of lectures on chemotherapy February 13 with a discussion by Herbert E. Carter, Ph.D., Urbana, Ill., on "Some Biochemical Aspects of Antibiotic Substances." Frederick F. Blicke, Ph.D., Ann Arbor, discussed "Synthetic Antispermatics" February 20. Others in the series included:

William H. Feldman, D.V.M., Rochester, Minn., Chemotherapy in Experimental Tuberculosis, February 27.

Clarence K. Banks, Ph.D., Detroit, Organometallic Compounds, March 6.

Harry S. Mosher, Ph.D., State College, Pa., Synthetic Antimalarial Drugs, March 13.

Elmore H. Northey, Ph.D., Bound Brook, N. J., Sulfonamide Chemotherapy: Facts and Fancies, March 20.

Willard H. Wright, Ph.D., Bethesda, Md., Past Developments and Present Needs in the Chemotherapy of Parasitic Diseases, March 27.

MINNESOTA

State Inaugurates Accreditation of Schools in Tuberculosis Program.—A program has been launched in Minnesota whereby individual schools or entire school systems are to be certified under a plan developed by the American School Health Association. The subcommittee for Minnesota, consisting of Dr. Edward A. Meyerdling, St. Paul, executive secretary, Minnesota Public Health Association, Dr. Sidney A. Slater, medical director of the Southwestern Minnesota Sanatorium, Worthington, and Dr. Lewis S. Jordan, medical director of Riverside Sanatorium, Granite Falls, has drawn several classifications to provide for schools doing different degrees of tuberculosis work, the class A certificate, the highest classification, going to the ideal program, which would detect all tuberculosis in any stage of its development and would provide for the creation of an environment entirely free from the disease. Under the program a tuberculosis control award will be given by the American School Health Association certifying that the recipient has fulfilled the minimum requirements set up by the association for the control of tuberculosis. Because the standards for certification would necessarily differ in the various states, depending on such factors as the incidence of infection, it was considered best to have the subcommittee of the school health association in each state decide on the standards for its own state. Dr. Jay A. Myers, Minneapolis, is credited with being the originator of the plan.

MISSISSIPPI

Public Health Election.—Dr. Archie L. Gray, Jackson, was recently chosen president-elect of the Mississippi Public Health Association at its meeting in Jackson. Dr. Cyrus M. Shipp, Bay St. Louis, was installed as president. Dr. Hugh B. Cottrell, Jackson, is the secretary-treasurer of the association.

Guy Post Named to New Position.—Dr. Guy R. Post, Clarksdale, director of the Coahoma County Health Department for six years, has accepted a position as medical director of the crippled children's service and medical consultant of vocational rehabilitation for the state of Mississippi. Newspapers reported that he was to take up his new work on February 16, with offices in the Standard Life building, Jackson.

NEW YORK

Demonstration Area Chosen for Rheumatic Fever.—In a recent talk Dr. John Fred Hiss, professor of clinical medicine, Syracuse University College of Medicine, announced the organization of a demonstration area for the treatment of rheumatic fever for New York State to be set up in the four counties of Onondaga, Cayuga, Cortland and Oswego. The purpose of the program, which will be extended to the rest of the state when successfully organized in these four counties, is to provide a complete plan for combating rheumatic fever. The proposed plan will be known as the Syracuse District Cardiac Program. In explaining the need for such a program

Dr. David D. Rutstein, Albany, deputy commissioner of health of New York City, enumerated as reasons the difficulty of diagnosis, the chronic nature of the disease, the wide prevalence of the disease and the complexity of care necessary for patients. In discussing the problem Dr. Homer F. Swift of the Rockefeller Institute for Medical Research said that in New York City in 1938 five times as many deaths were caused among children by rheumatic fever as by whooping cough, spinal meningitis, measles, diphtheria and scarlet fever combined. Other speakers on the program at which the new project was announced included Drs. Albert D. Kaiser, Rochester, and T. Duckett Jones, Boston.

Seek Fund to Finance Distribution of Blood.—On February 16 the legislature was asked to appropriate \$100,000 for use by the state commissioner of health in establishing a program for the collection and distribution of human blood and its derivatives for the treatment of the sick and injured in the state, the *New York Times* reported. The idea stemmed from a suggestion made to the health department two years ago by the state medical society and was presented in a bill by Assemblyman Lee B. Mailler, chairman of the New York State Health Preparedness Commission. The state department after a two year study formed the following conclusions:

That the current use of blood and blood derivatives in hospitals and medical practice in the state to date is only 60 per cent of that estimated to be the desired use on the basis of current knowledge of the value of these products.

That more than 90 per cent of the hospitals in the state are not in a position to carry out adequate testing for blood types with regard to the Rh factor, largely because of the scarcity and cost of the so-called potent Rh typing serum.

That for the money now being spent in this field the state could supply to communities all the blood and plasma needed as well as a large variety of useful derivatives and special products, such as Rh typing serum and antipertussis or anti-whooping cough serum which are not now available.

It was stated that the present use of blood and its derivatives was confined to the larger urban centers. If approved, it is anticipated that the program during its first year would not be complete but would make blood products widely available and would supply important additional derivatives.

New York City

The Harvey Lecture.—Dr. Edwin B. Astwood, assistant professor of pharmacotherapy, Harvard Medical School, Boston, will deliver the sixth Harvey Society Lecture of the current series at the New York Academy of Medicine, March 15. His subject will be "Chemotherapy of Hyperthyroidism."

Orthopedic Rehabilitation.—Dr. Vasili D. Chakhlin, director of the Moscow Orthopedic and Prosthetic Institute, and Dr. Philip D. Wilson addressed the New York County chapter of the American-Soviet Medical Society, February 28 on "Reconstruction by Orthopedic Treatment." The film "Soviet Medicine at the Front" was also shown at the meeting.

Free Chest X-Rays for Students.—Beginning February 26 all pupils in the third and seventh terms of the New York City Vocational High Schools will be offered free tests and, when necessary, free chest x-rays to determine that their lungs are in good condition. Both tests and x-rays will be given in the school buildings under the joint supervision of the city department of health and the board of education. Pupils must obtain the written consent of a parent or guardian in order to qualify for this service.

New Child Center.—The building equipment at 2 East 105th Street, formerly used by the New York Society for the Prevention of Cruelty to Children, is being donated by the society to a group representing Catholic, Protestant and Jewish welfare organizations for use as a home for neglected and dependent children between the ages of 2 and 16. The new group, the Association for Temporary Care of Children, held its organization meeting in Mayor La Guardia's office recently, choosing Mrs. Helen E. Dickinson, who recently returned from India, where she served as a representative of the American Red Cross as director of the new home. The society will maintain part of the maintenance of the new project.

Columbia Merges Medical and Dental Staffs.—The dental and medical faculties of Columbia University have been merged by action of the board of trustees, according to the *New York Herald Tribune*, February 7. The dentistry staff will have "departmental autonomy" and some members will have seats on the faculty of medicine, but the curriculum will be in charge of a "committee on dental education, a majority of whose members will be chosen by the dental staff," Nicholas Murray Butler, Ph.D., president, said. The name of the School of Dental and Oral Surgery will be continued. An associate dean for dental and oral surgery will be executive officer of the university department of dental and oral

surgery. Up to now the school has been headed by Houghton Holliday, D.D.S., as associate dean. Medical and surgical staffs of the Medical Center recognize need for better dental services for ward and clinic patients, and closer coordination will be achieved with unified action and direction, it was stated. Anatomy, bacteriology and nutrition "are as much dental as they are medical subjects." The decision aims to insure active support of dental teaching and research by its "strong staff of physicians, surgeons, scientists, nurses and public health leaders" and "to emphasize the importance of dentistry itself." The report indicated that there had been considerable objection to the consolidation by members of the dental faculty.

OHIO

Dr. George J. Heuer Gives Morris Lecture.—Dr. George J. Heuer, professor of surgery, Cornell University Medical College, New York, gave the eighth Roger S. Morris Memorial Lecture at the University of Cincinnati College of Medicine, February 20 (THE JOURNAL, Sept. 16, 1944, p. 182). His subject was "The Surgical Treatment of Chronic Constrictive Pericarditis: A Postscript."

Research in Toxins and Antitoxins.—Western Reserve University School of Medicine, Cleveland, has been given \$12,600 from Wyeth, Inc., Philadelphia, pharmaceutical and biological manufacturers, to conduct studies of toxins and antitoxins in order to determine more closely the active principles of these substances. The research work will be carried on by Louis Pillemer, Ph.D., research immunologist of the university's Institute of Pathology, under the direction of Enrique E. Ecker, Ph.D., professor of immunology. An attempt will be made to isolate the active substance or substances given off, for instance, by *Clostridium tetani* which causes lockjaw, and also the active substance in the antitoxic serum which affords protection in this disease. It is hoped to purify the toxin and the antitoxin of tetanus to a high degree—up to the point of homogeneity, if possible.

Joseph Wearn Named Dean of Western Reserve.—Dr. Joseph Treloar Wearn, professor of medicine at Western Reserve University School of Medicine, Cleveland, has been appointed dean of the medical school, succeeding Dr. Torald H. Sollmann, who retired as dean on July 1, 1944. Dr. Wearn will continue as professor of medicine at the university and as director of the department of medicine at Lakeside Hospital. In 1917 Dr. Wearn graduated at the Harvard Medical School, Boston, where he was serving as associate professor of medicine when he joined Western Reserve in 1929. Dr. Wearn is also a consultant to the Surgeon General of the United States Army, consultant to research and development branch of the Office of the Quartermaster General of the U. S. Army, chief of the division of physiology, committee of medical research and chairman of the subcommittee on blood substitutes of the Office of Scientific Research and Development.

PENNSYLVANIA

Personal.—Dr. Hilding A. Bengs, North Warren, who has been associated with the Warren State Hospital since 1932, was recently appointed assistant director of the bureau of mental health, state department of welfare. Dr. Bengs was secretary of Warren County Medical Society and had served in that capacity since 1937.—Dr. Budd J. Reaser, Martins Creek, was elected president of the Northampton County Board of Prison Inspectors recently.

Diplomates Association Formed.—The Diplomates' Association of Berks County Physicians was organized January 17 under the sponsorship of the Reading Eye, Ear, Nose and Throat Society. Membership is extended automatically to diplomates of boards listed in the Directory of Medical Specialists, and the group will meet once a year jointly with the Reading Eye, Ear, Nose and Throat Society. Officers of the new group include Drs. William S. Bertolet, president, Fred B. Nugent, president-elect, and Thomas Butterworth, secretary, all of Reading. At the recent meeting Dr. Harrison F. Flippin, Philadelphia, discussed "The Clinical Use of Penicillin."

Memorial to Physician.—The improvements and expanded services at Lehigh University, Bethlehem, will be made possible by a gift of Dr. William L. Estes, president of the Medical Society of the State of Pennsylvania, as a memorial to his father, the late Dr. William L. Estes, surgeon in chief at St. Luke's Hospital. The Estes grant will be used to revamp the present elementary biology laboratory, the new facilities to be rededicated as the William Lawrence Estes Laboratory. Dr. Estes, the donor, graduated at Lehigh University in 1905 and at Johns Hopkins University School of Medicine, Baltimore, in 1909, subsequently succeeding his father as surgeon in chief at St. Luke's Hospital. His father

was lecturer in physiology and hygiene at Lehigh from 1883 to 1923, receiving the honorary degree of doctor of science there in 1934.

Philadelphia

Rockefeller Grants for Postwar Training.—The Rockefeller Foundation has given the University of Pennsylvania School of Medicine funds to provide postwar training at an advanced level for a number of young medical men of exceptional promise whose medical education has been interrupted by the war and who now are in the armed forces, it was announced February 22. The men will be selected for study and work, under distinguished teachers, in surgery, pharmacology or psychiatry, the foundation having made three grants of \$8,000 to provide the training in each of those particular fields. The training, which will begin after the men have concluded their military service, will cover a maximum of four years, and the number of recipients will depend on the extent and character of the instruction required. Those in the field of surgery will study and work under Col. Isidor S. Ravdin, M. C., who is on leave of absence from the Harrison professorship of surgery and the directorship of the Harrison Laboratory of Surgical Research at the university while he serves as commander of an army hospital in India. The men receiving training in pharmacology will be under Dr. Carl F. Schmidt, professor of pharmacology in the University of Pennsylvania School of Medicine, and those in psychiatry under Dr. Earl D. Bond, professor of psychiatry in the school of medicine and the Graduate School of Medicine and vice dean for neuropsychiatry in the latter school.

RHODE ISLAND

Seminar on Industrial Health.—A graduate seminar in industrial health opened at Brown University, Providence, February 20, with a talk by Dr. Dwight O'Hara, acting dean and professor of preventive medicine, Tufts College Medical School, Boston, on "Bases of Industrial Medical Practice." The seminar is under the auspices of the new department of medical sciences (THE JOURNAL, July 22, 1944, p. 861). Mr. J. J. Bloomfield, senior sanitary engineer, U. S. Public Health Service, spoke February 27 on "Labor Management Relationships in Industrial Health Programs," and Dr. Harvey Bartle, Philadelphia, formerly chief medical examiner and medical director, Pennsylvania Railroad, March 6, on "Industrial Health: A Specialty." Others in the series include:

Dr. John J. Wittmer, personnel and medical director, Consolidated Edison Company, New York, Absenteeism in Industry, March 13.
Dr. Clarence O. Sappington, editor, Industrial Medicine, Chicago, What Medicine Has to Offer Industry, March 20.
Louis Schwartz, medical director, U. S. Public Health Service, Industrial Skin Diseases, March 27.
Dr. William A. Sawyer, medical director, Eastman Kodak Company, Rochester, N. Y., Profits in an Industrial Health Program, April 3.
Dr. Edward C. Holmblad, medical director, Railway Express Agency, Chicago, Preplacement and Periodic Physical Examinations, April 10.
Mrs. Irene Willoughby, R.N., industrial nursing consultant, Liberty Mutual Insurance Company, Industrial Nursing Consultation from the Insurance Viewpoint, April 17.
Mrs. William J. Connolly, director, state department of labor, State Department of Labor and the Workers' Health, April 24.
Miss Catherine R. Dempsey, R.N., director of nurses, Simplex Wire and Cable Company, Work of the Nurse in Industry, May 1.
Mr. Jesse C. Williams, R.N., director of nurses, Pratt and Whitney Aircraft Division, United Aircraft, In-Plant Training for the Industrial Nurse, May 8.

The series was arranged by the Rhode Island Society of Industrial Physicians and Surgeons and the Rhode Island Industrial Nurses' Club in conjunction with the industrial health committee of the Rhode Island Medical Society.

TEXAS

Meeting of Pathologists.—At the annual meeting of the Texas Society of Pathologists in Dallas, January 28, it was voted unanimously to affiliate with the Texas Academy of Science, which is a part of the American Association for the Advancement of Science. Officers of the society include Drs. Paul Brindley, Galveston, president; May Owen, Fort Worth, president-elect; Sidney W. Bohls, Austin, vice president; John J. Andujar, Fort Worth, secretary-treasurer, and Charles T. Ashworth, Dallas, secretary-treasurer-elect. The Texas Society of Pathologists has drawn up a model bill to be presented to the legislature establishing a modern medical examiner system. The present law in Texas permits justices of the peace to serve as coroners and medical examiners.

Educational Lectures.—Dr. J. Arnold Barger, Rochester, Minn., lectured at the University of Texas Medical Branch, Galveston, under the auspices of Phi Chi medical fraternity. His subject was "Modern Concepts of Intestinal Infection." Dr. Walter C. Alvarez, Rochester, gave the annual Phi Beta Pi Lecture at the school March 2 on "Nervous Indigestion." Dr. James S. Plant, the director of the Essex County Juvenile

Clinic, Newark, N. J., presented the William Buchanan Lecture at the school, March 5, speaking on the principles of management of psychologic problems in children. Dr. Plant participated in a conference on psychologic and psychiatric problems in children, March 9, at the Hotel Stephen F. Austin, Austin. The conference was sponsored by the University of Texas Child Health Program, the Texas Section of the American Academy of Pediatrics, the Texas Pediatric Society, the Texas Society for Mental Hygiene, the Hogg Foundation of the University of Texas and the children's division of the state department of public welfare. Other speakers included Dr. Milton E. Kirkpatrick, director of the Guidance Center of New Orleans, and Dr. John H. Waterman, director of the Guidance Center of Houston.

Recommendations to Curb Tuberculosis in San Antonio.—*Public Health Reports*, February 2, discusses a recent survey of the U. S. Public Health Service in San Antonio, which has the highest tuberculosis death rate of any large city in the United States. Recommendations are presented to overcome the disease, which is the second leading cause of death in the city for persons of all ages. One out of every ten deaths is from this disease. Heart disease, including coronary disease, is the chief cause of death, forming 152 per cent of the total deaths. A chest x-ray survey of more than 20,350 residents, of whom almost 19,000 were Latin-American, revealed 993 persons, or 4.9 per cent, with reinfection tuberculosis. The survey took four months. Similar surveys in various sections of the country reveal that an average of approximately 1 per cent of the population has reinfection tuberculosis. More than 90 per cent of the persons examined were of Latin-American extraction, only a small number were colored. Very small differences in the proportion of reinfection of tuberculosis were observed between the Anglo-Americans and the Latin-Americans. Among the 1,277 Anglo-Americans, 71 cases of reinfection tuberculosis, comprising 5.5 per cent of the group, were found. Among 18,607 Latin-Americans, 914 cases were discovered, or 4.9 per cent. The rates were higher among the males than among the females both in the Latin-American and in the Anglo-American groups. The creation of an office of tuberculosis control in the city health department and the appointment of a full time physician as director are considered essentials in the development of a control program which would include a permanent plan of case finding, clinical care, sanatorium treatment and follow-up with rehabilitation being implemented in cooperation with all interested agencies.

WEST VIRGINIA

State Meeting Canceled—The seventy-eighth annual meeting of the West Virginia State Medical Association, which was scheduled for Clarksburg, May 14-15, has been canceled. This will be the first year that an annual session has not been held by the association since its organization in 1867.

Positions Available—The Merit System Council of the State of West Virginia recently announced a number of miscellaneous positions available throughout the state. The positions include those of deputy state health commissioner, director of maternal and child hygiene, assistant director of maternal and child hygiene, director of communicable diseases, director of venereal disease control and director of public health education, as well as miscellaneous positions as local health officer, bacteriologist, nutritionist consultant and public health nursing supervisors. A position is also available as chief of medical services in the department of public assistance and one as cancer control education consultant. State residence requirements for these positions have been waived. Additional information may be obtained from the Merit System Council, 212 Atlas Building, Charleston 1.

Actions of State Medical Society—At a meeting January 18 the council of the West Virginia State Medical Association rejected a proposal of the legislative committee that pathologists be licensed by the public health council to practice in the state. The proposal, previously unanimously approved by the legislative committee, would have required applicants to have an M.D. degree to have resided in a community in West Virginia for at least two years, to be citizens of the United States, to have the endorsement of the local medical society and to pass such examination as might be required by the public health council. A committee of five members has been named to work out details for providing psychiatric education for members of the state medical association as the result of the report on the returns of more than five hundred psychiatric questionnaires sent to members. Returns indicated that the majority favored some sort of psychiatric education through the medium of local society meetings and articles in the state journal.

GENERAL

Statistical Bulletin Completes Twenty-Five Years—The Statistical Bulletin of the Metropolitan Life Insurance Company with its January issue announces its completion of twenty-five years. An editorial by Louis I. Dublin, Ph.D., New York, lauds the bulletin for its usefulness as a medium in public health education.

Examination in Internal Medicine.—The next written examination of the American Board of Internal Medicine will be held on October 15. The closing date for filing applications is August 1. Candidates in the armed forces may take the written examination at their station with the permission of their medical commanding officer. Dr. William A. Werrell, 1301 University Avenue, Madison 5, Wis., is the assistant secretary-treasurer of the board.

Tuberculosis Association Surveys Activities—The National Tuberculosis Association has launched a five year survey of all educational activities of its organization to evaluate and improve the materials and methods in use at the present time as well as to formulate a constructive program for the future. According to the *Bulletin* of the National Tuberculosis Association, the study will extend over the period of 1945-1950 and will involve a thorough analysis of the organization's personnel needs and the selection of pilot centers on a local level in cooperation with state associations. A technical or steering committee, under the chairmanship of Werrett W. Charters, Ph.D., director of research, Stephens College, Columbia, Mo., will work with four associated committees on program materials, personnel training and pilot study. The technical committee is composed of Dr. Charters, Dr. Herman E. Hilleboe, chief, tuberculosis control division, U. S. Public Health Service, and Dr. Kendall Emerson, managing director of the National Tuberculosis Association and the chairman of the other four committees. In addition to the working committees a national advisory committee will be appointed, made up of persons prominent in the fields of public health, welfare and education. Service heads at the national office will constitute a staff resource committee available for consultation whenever necessary.

Footprinting of Infants—The procedure of taking footprints is explained in an article entitled "Footprinting of Infants," published in the January Law Enforcement Bulletin of the Federal Bureau of Investigation. Individuality, continuity and immutability are three features of any system for personal identification purposes, the bulletin states. Identification by fingerprints, palmprints or footprints is the only method of personal identification which satisfies all of these requirements. The friction areas of the fingers, palms and feet have papillary ridges which form well defined patterns and contain distinctive characteristics. The possibility of any two human beings having surface areas of skin on their fingers, palms or feet which have exactly the same ridge characteristics is so remote that it is beyond the realm of probability. In explanation of these three features it is stated that the definitive formation of the ridges on the palms, fingers and feet of human beings begins several months before birth and remains throughout the entire lifetime. These ridges are intact after death up until the time decomposition of the body takes place. During the entire lifetime of a human being the ridges of his hands and feet remain exactly in their original formations and cannot be changed. The majority of hospitals today are using the methods of footprints for identification of infants in preference to fingerprints or palmprints. The reason for this is that the ridges are more pronounced on the feet and it is easier to obtain prints of this surface from newborn babies. The purpose of taking footprints is to provide a permanent record of individuality so that, in the event of a question arising later as to the identity of the child and its mother, conclusive proof of its identity can be offered. The footprints of the infant, therefore, should be taken immediately after birth. The equipment required for taking footprints is inexpensive and easy to obtain and requires but little training to use. It consists of printer's ink (a black heavy paste), a roller and an inking plate (a small piece of plate glass). Ordinary writing ink, colored ink and stamp pad ink are not very satisfactory mediums because they are too light or too thin and take too long to dry. The roller best adapted to this work is similar to that used by printers in making galley proofs and should be about 3 inches long and 1 inch in diameter. In preparing to take a set of impressions a small drub of ink should be placed on the inking glass and thoroughly rolled until a thin even film covers the entire surface of the glass. To insure best results, the area of the feet to be printed should be thoroughly dried by wiping with a piece of gauze. The ink may be applied directly to the infant's feet.

from the roller, but care should be exercised to insure a very thin film of ink on the portion of the foot to be printed. The inked area is then pressed firmly on the surface of the card or certificate, but caution must be used to avoid either the foot or the paper being moved during the printing process in order to avoid smudging the print. Too much ink and too much pressure will result in a mere blot on the card, which of course is of no value for identification purposes.

Absentee Sickness Rate Soars to Reflect Wartime Conditions.—Absenteeism due to sickness among male industrial workers showed a substantial increase for the third quarter of 1944, sending the total industrial sickness rate in this year up to 37 per cent above the average for the period 1935-1944, according to statistics released by the Industrial Hygiene Division of the U. S. Public Health Service. Nonrespiratory-nondigestive diseases rose 15 per cent above a like period in the previous year. Conditions contributing to this record included a 26 per cent increase in rheumatism, a 29 per cent increase in neurasthenia and other diseases of nervous or mental origin and a 34 per cent increase in diseases of the genitourinary system. The incidence of rheumatic diseases, diseases of the heart and arteries, nephritis and nervous diseases has never been equaled or exceeded within the past decade. Nervous diseases showed the highest rate of increase, rising 76 per cent above the ten year mean. The rate of respiratory diseases, while slightly lower than in 1943, was 32 per cent above the average for the decade. Digestive diseases also rose to a rate exceeding anything experienced within the ten year period. Employment conditions peculiar to wartime are held responsible. Categories of disease showing the highest increase involve mainly older workers. The hiring of workers long unemployed or retired is one factor held to contribute to the record sickness rate, as is the employment of youths and other inexperienced personnel and the necessity for employing in industry men rejected by the armed services. Wartime working and living conditions are thought to be reflected, since other factors held accountable include emotional strain and personal mental conflict, overcrowding in plants and war communities, fatigue due to the lengthened work week, and night work.

FOREIGN

Jeffries Award Goes to Sir Harold Whittingham.—The John Jeffries award for outstanding contributions to aviation medicine was awarded January 31 to Air Marshal Sir Harold E. Whittingham, director of Royal Air Force medical services (*THE JOURNAL*, Sept. 30, 1944, p. 313). The presentation was made by Major General David N. W. Grant, Air Surgeon of the U. S. Army Air Forces, during a meeting of the Institute of Aeronautical Sciences in New York.

Committee Named for Trypanosomiasis.—The British Secretary of State for the Colonies has appointed a tsetse fly and trypanosomiasis committee to consider and advise on the coordination of action, including research, directed against human and animal trypanosomiasis and, in particular, against the tsetse fly as the chief vector, according to *Science*. The committee, on which the Dominions Office and the Sudan government are represented, will report from time to time to the Secretary of State for the Colonies, and on all matters affecting research its recommendations will be referred to the Colonial Research Committee for comment and advice before submission to him.

Deaths in Other Countries

Henry Dreyfus, D.Sc., chairman and managing director of British Celanese Ltd., and known as a physician, chemist, industrialist and financier, died Dec. 30, 1944, a week before his sixty-third birthday.—Sir Buckston Browne, prominent physician and benefactor of the Royal College of Surgeons, died recently, aged 94.—Sir Henry Gauvain, since 1908 medical superintendent of Lord Treloar Cripples' Hospital and College, Alton and Hayling Island, died January 19.—Dr. Frederick W. Eurich, known for his work against anthrax, died in Southampton, England, February 16.

CORRECTION

Stiff Neck and Meningeal Irritation.—In *THE JOURNAL*, February 24, page 438, in the discussion of Dr. Toomey's paper by Dr. Hoyne, the statement that, "if the diagnosis is verified either by a blood culture or possibly by a smear from petechiae in the skin, usually a lumbar puncture is necessary" should read ". . . is not necessary."

Government Services

Jack Masur Succeeds Dean Clark

Jack Masur, surgeon, U. S. Public Health Service Reserve, has been appointed chief medical officer in the Office of Vocational Rehabilitation, Federal Security Agency, to succeed Dean A. Clark, senior surgeon, U. S. Public Health Service Reserve. Dr. Clark has been on leave of absence recently on a special project and will soon be transferred to a special assignment in the Office of the Surgeon General of the Public Health Service. Dr. Masur, who has been serving as assistant chief medical officer since April 1, 1944, had previously been assigned as hospital administration specialist to the U. S. Office of Civilian Defense. Victor H. Vogel, surgeon, U. S. Public Health Service, whose appointment as consultant in psychiatry was recently announced, has been assigned assistant chief medical officer.

Sale of Penicillin

Proposed procedure for gradual elimination of existing control over distribution of penicillin for civilian use and simultaneous diversion of the drug into normal trade channels for sale without restriction was outlined to the penicillin industry advisory committee at its recent meeting in Washington by Fred J. Stock, chief of the drugs and cosmetic branch, War Production Board. Mr. Stock made no promise as to the specific date on which the change would be undertaken, but it is understood that, barring unforeseen heavy demands by the military or some other unforeseen difficulty, it can become an accomplished fact within several months. According to *Drug Trade News*, Mr. Stock said he proposes to "release the brakes" gradually, retaining the existing Civilian Penicillin Distribution Unit, under John N. McDonnell, in Chicago, until it is certain that distribution is operating smoothly through trade channels. Penicillin production is now above the 400 billion unit mark each month, it was stated, and the 2,700 hospitals acting as distributing agents under the controlled distribution plan are now receiving about 35 billion units a month, the remainder going to the armed forces. Sufficient advance notice of the date of the change over from controlled distribution to distribution through usual trade channels would be given so that manufacturers can plan promotion campaigns, it was stated.

Graduate Work in Health Education

Fellowships for graduate work in health education are being offered to qualified applicants by the U. S. Public Health Service in cooperation with the National Foundation for Infantile Paralysis, Surgeon General Thomas Parran has announced. These fellowships for the collegiate fall term of 1945 are being awarded to meet present and future needs for trained health educators in schools, communities and local, state and federal health departments. Men and women between the ages of 22 and 40 who are citizens of the United States and who hold a bachelor's degree from a recognized college or university may apply. Fellowships will lead to a master's degree in public health. The twelve months training period will consist of nine months in the School of Public Health at the University of North Carolina, Yale University or the University of Michigan and three months' field experience in community health education under supervision. Applicants must meet the requirements for admission to the schools of public health. Training in science, sociology, education and psychology, plus experience working with people, are desirable prerequisites. The fellowships provide a stipend of \$100 a month for twelve months, full tuition and travel for field experience. Candidates must pay their travel to and from the university at the beginning and end of training. "The existing shortage of trained health educators and the demand for expansion of health education activities indicated both in this country and abroad highlight the need for qualified personnel with a thorough understanding of both public health and education," the Surgeon General said. Basil O'Connor, president of the National Foundation for Infantile Paralysis, pointed out that coordination of official and voluntary agencies on a community basis will make available the services of competent health educators, whose aid will be invaluable in solving community health problems. He stressed the assistance to be given by such a group during an infantile paralysis outbreak in informing residents about the disease and the necessity for long continued after-care of patients. Fellowship application forms may be obtained from the Surgeon General, U. S. Public Health Service, Washington 14, D. C. Applications must be accompanied by a transcript of college credits and a small photograph and must be in the office of the Surgeon General not later than June 1.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 10, 1945.

How Science Saved Britain

Speaking at a meeting of the British Association for the Advancement of Science, Lord Woolton, minister of reconstruction, said that the policy of the British government during this century of giving little support to men of science had brought the country near defeat in the war. We remained unprepared either to breed a nation that would be physically fit or to grow and store enough food to ensure ourselves against the growing dangers of submarine warfare, which were known to our naval scientists. Within a few weeks of Lord Woolton's taking office in April 1940 as minister of food we were faced with a drop of 50 per cent in our food imports. We were saved from starvation by the application of scientific knowledge to the problem of securing the right foods, not to satisfy our appetites but to give us nutrition. At the same time scientific research applied to agriculture was making possible increase in the yield of land beyond expectations. Now in the sixth winter of the war, in which the scientist had played such a conspicuous part, our standards of health are well maintained and in many respects improved, while agriculture has been serving a great national purpose.

From the first, he pointed out, this has been a scientific war. In the early stages, used defensively, science helped to stave off defeat; now in the offensive stage it was making victory possible. Even more significant was the application of the scientific method in the operational field. Eminent scientists were found at the right hand of our military, naval and air strategists, applying to combat the same scientific methods which they used in peacetime research. They had been at work on problems of civil defense, combined operations, the defeat of U boats and even of operations on the battlefield. In the great experiment in reconstruction to be launched when the war is over the scientist can play a part as great as that which he has played in war. War experience on food and nutrition has provided many practical examples of what must survive in the postwar world. Thus, said he, we can save not only human suffering but millions of pounds a year previously wasted in physical ill health and consequent industrial incompetence.

Proposed Academy of Medicine

The three Royal Colleges—of Physicians, of Surgeons and of Obstetricians and Gynecologists—which represent the main divisions of the medical profession have originated independently at different periods and occupy different sites in London. In a letter to the *Times* a leading ophthalmic surgeon, Sir Stuart Duke-Elder, recalls that about two years ago he wrote advocating the unification of the many bodies which today represent the academic aspects of medicine and points out that the arguments then advanced have greater force today. It is eminently desirable that there should be an authoritative body which could uphold and foster the scientific progress of medicine, maintain professional standards, particularly at the consultant level, and stimulate research. In every liberated country of Europe which he visited Duke-Elder saw the eagerness with which the doctors and scientists look to Britain for a cultural lead to replace the hegemony hitherto exercised from Berlin. The creation of the center in London which could represent worthily all the academic aspects of medical practice would add much to our cultural and political influence.

The first essential step toward this unification would be to bring together on a common site the three Royal Colleges. There is an opportunity for this, as the Royal College of Sur-

geons has recently acquired the freehold of adjacent property. This would double their accommodations and allow sufficient space for the other two colleges. Duke-Elder urges that the present opportunity be seized and a substantial step forward be taken for founding an academy of medicine. His proposal has received impressive support from the leaders of the profession.

Lord Dawson, past president of the Royal College of Physicians and president of the British Medical Association, states that for many years the need of an academy of medicine has been felt in the profession in order to gather the Royal Colleges and the increasing number of specialties and other activities into a coherent whole. The principal specialties—orthopedics, radiology, anesthetics, otolaryngology and ophthalmology—have decided to make their homes on the new site acquired by the Royal College of Surgeons and are already settled there.

Sir Alfred Webb-Johnson, president of the Royal College of Surgeons, states that for some years the council has had in mind the desirability of forming an academy of medicine, and, in order to provide an opportunity for this, acquired adjacent sites, which are adequate for the requirements of all three colleges and the specialist associations. The council favors Lincoln's Inn Fields (where the college is), because of its advantages and amenities. Lincoln's Inn Fields is the largest square in London. It is a quiet area and has an academic atmosphere, which has been created by the legal society which has its home there. The location is central and accessible and is known throughout the world as the site of the famous Hunterian Museum. The college is prepared to put to common use its facilities—conference rooms, museums, laboratories and library. In support of Duke-Elder's plea Lord Horder says that the formation of an academy of medicine, apart from many obvious advantages to medicine, would enable the profession to speak with one voice where national interests are concerned.

Sir Thomas Barlow

Sir Thomas Barlow has died in his hundredth year. After a distinguished student's career he qualified in 1871. In 1876 he was appointed assistant physician to Charing Cross Hospital and in 1878 exchanged this post for a similar one at the London Hospital. In 1880 his old teachers at University College Hospital invited him to return as assistant physician. He was professor of clinical medicine at University College from 1895 to 1907. He was distinguished as a great clinical observer. He would spend much time on any case that presented a new combination of symptoms. Early in his career he published, in conjunction with Samuel Gee, another great clinician, a paper on cervical opisthotonos in which simple or basic meningitis (now known as meningococcal meningitis) was differentiated from tuberculous meningitis. Rickets was another disease on which he made important observations. With Lees he inquired into the relationship of congenital syphilis and rickets. They found that in 47 per cent of the cases in which craniotabes with bosses on the frontal and occipital bones occurred in rickets there was a certain history of congenital syphilis. At the International Congress of Medicine in 1881 he showed, in conjunction with Warner, the frequency and clinical significance of subcutaneous tendinous nodules in acute rheumatism of children. Their view that the nodules indicate concurrent and usually progressive heart disease was confirmed by other observers. He pointed out the parallelism between intermittent hemoglobinuria and the paroxysmal attacks of Raynaud's disease. He suggested that other visceral paroxysmal disorders might be found in these cases comparable to the temporary enlargement of the spleen sometimes found in hemoglobinuria. This suggestion he later verified. He is best known for his work on infantile scurvy. The disease had previously been described, but it was generally confounded with rickets. Barlow proved its identity with the scurvy of adults. His work so

impressed the Germans that they termed the condition "Barlow's disease." His work had an important effect on infant feeding at a time when artificial foods and sterilized milk were becoming popular. He was physician to three British sovereigns and the recipient of numerous distinctions. At the age of 87 he received in person the gold medal of the Royal Society of Medicine at its annual dinner. He was president of the International Medical Congress held in London in 1913.

British Casualties in the War Amount to a Million

The official report of British casualties in the fighting forces in the war from Sept. 3, 1939 to Nov. 30, 1944 has been issued. The total for the whole British Empire is 1,043,554. This consists of 282,162 killed, 80,580 missing, 386,374 wounded and 294,438 prisoners of war. Of the casualties 635,107 come from Britain, 78,985 from Canada, 84,851 from Australia, 34,115 from New Zealand, 28,943 from South Africa, 152,597 from India and 28,946 from the colonies. These figures are not the total casualties, for they exclude civilian casualties due to enemy action and casualties of merchant seamen.

BUENOS AIRES

(From Our Regular Correspondent)

Jan. 20, 1945.

National Department of Public Health

Dr. Manuel Augusto Viera, director of public health in Argentina, has officially described the laws pertaining to public health. The Department of Public Health will increase and improve the various centers of medical care, preventive medicine and general and preventive hygiene. People will have periodic medical examinations, free of charge. The results of these and the statistics of the conditions of health of the people will be made public. Dr. Viera states that the new subsidies will lead to a better national health service. Subsidies granted by the Central Department of Public Health to provincial health centers will be apportioned to the needs of the centers, which will be operated as branches of the central department, with due consideration to local autonomy. If the functions of public health centers are found to require more centralization, the regulations will be modified in accordance with the circumstances. Sanitary posts for administration of medical and preventive care will be established in isolated regions. The sanitary posts will be connected with regional hospitals, which in turn will be connected with larger specialized hospitals. Regional sanitary delegations have been established in Tucuman, Santa Fe, Mendoza and Bahia Blanca. The offices of international health, the office of coordination of passive anti-air defense and the committee on the pharmacopeia and on alimentation will depend directly on the Central Department of Public Health.

Meeting of Industrial Physicians

The second meeting of industrial physicians was recently held in Buenos Aires under the auspices of the Instituto Argentino de Seguridad. Dr. Ismael Urbandt of the National Department of Public Health presided. Delegates were present from Brazil, Chile and Uruguay. Dr. César Corti Maderna, representing the board of officers of the Instituto Argentino de Seguridad, emphasized the importance of social medicine for workers and the importance of preventing accidents and diseases either general or industrial. Centers for medicosocial services have been organized and new centers are to be organized. The Instituto Argentino de Seguridad feels the importance of medical industrial congresses for the establishment of measures for the prevention of accidents, the recovery and reeducation of incapacitated workers after accidents and the orientation and training in trades suited for those who are incapacitated after accidents. Studies of workers with heart disease should be carried on to obtain information to serve as a basis for regulations to aid these persons.

Topics discussed at the meeting included brucellosis, silicosis, industrial hernia, dermatosis in metal burnishers, dermatosis from contact with bakelite, medical prevention of industrial dermatosis, observations on punctate erythrocytes of workers in industries which may lead to lead infection (Dr. Ismael Urbandt and Mario P. Francone), effort lumbago and protrusion of intervertebral disks. Other topics discussed included cardiac workers, psychologic problems and organization of industrial medicine. The importance of organizing an institute of industrial medicine and the need of providing proper laws and proper health insurance for industrial workers was emphasized.

Samples of Drugs

While Dr. Galli was director of public health in Argentina a law was passed prohibiting the giving of samples to physicians and hospitals by drug laboratories. The law met with disapproval. Liberal donation of samples is an old practice in the country and a good form of aiding poor patients in the hospitals. Dr. A. Viera, present director of public health, recently denounced the law. Distribution of samples of drugs as a donation of drug laboratories to physicians and hospitals is necessary to verify the claims concerning the pharmacologic effects and therapeutic uses of drugs. The Department of Public Health recently passed a new law requiring the exportation of drugs and the preparation of drugs to be exported to be supervised by the Department of Public Health.

Laws for Practice of Medical Specialism

According to recent action by the National Department of Public Health of Argentina specialists will be classified in the following medical branches: (a) urology, (b) gynecology, (c) dermatosyphilology, (d) otorhinolaryngology, (e) ophthalmology, (f) gastroenterology, (g) rheumatism, (h) pediatrics, (i) proctology, (j) endocrinology, (k) cardiology and circulatory diseases and (l) neurology and psychiatry. No other classification will be recognized.

South American Congress of Pediatrics

The first South American Congress of Pediatrics was held in Santiago, Chile, the last week of November 1944 with participation of Argentina, Bolivia, Chile, Peru and Uruguay. Drs. Andrade Marin of Quito, Ecuador, and Félix Hurtado of Havana, Cuba, were specially invited to the congress.

Marriages

ASHBEL C. WILLIAMS, Jacksonville, Fla., to Miss Kathleen Margaret Bainton Donaghue at Tavistock, Devon, England, December 24.

JAMES ALLEN MEADOWS JR., Birmingham, Ala., to Miss Mildred Evans Barnes of Andalusia, December 16.

KENNETH F. LAWS to Miss Betty J. Lahrman, both of Lafayette, Ind., at South Bend, November 9.

ROBERT O. PITTS III, Nashville, Tenn., to Miss Clementeene Pearson of Sarasota, Fla., December 23.

MURRAY P. WHIGHARD, Murphy, N. C., to Miss Willietta Evans of Gulfport, Miss., December 26.

JOSEPH STOMEL to Miss Wilhelmina R. Gollum, both of Los Angeles in Yuma, Ariz., February 18.

THOMAS GRASTY BELL, Staunton, Va., to Miss Louisa Lile Tucker of Cleveland, December 24.

BELTON J. WORKMAN, Woodruff, S. C., to Miss Kathleen Bruen of Conway, December 27.

LEON L. RACKAW, Forest Hills, N. Y., to Miss Doris Starkman of Brooklyn, February 11.

FRANK W. FORDYCE to Mrs. Jessie Weese, both of Des Moines, December 27.

KATHRYN E. CAMPBELL, Boonville, Ind., to Lieut. John L. Susott, January 11.

Deaths

Lawrence Getz * Ancon, Canal Zone; Johns Hopkins University School of Medicine, Baltimore, 1918; a first lieutenant in the medical corps of the U. S. Army in France from June 1917 to February 1919; interned at the City Hospital at Bay View, Baltimore; served as resident physician at the Hospital Santo Tomas, Panama, Republic of Panama, where he had been chief of the laboratory from 1926 to 1929 and again from 1942 until his death; assistant instructor in pathology at his alma mater and at the University of Maryland School of Medicine, Baltimore, 1923-1924; joined the staff of the Herrick Clinic and the Hospital de Panama in July 1929, serving until 1941; specialist certified by the American Board of Internal Medicine; fellow since 1929 of the American College of Physicians and governor of the college for Panama and the Canal Zone in 1941-1942; in 1928 president of the Medical Association of the Isthmian Canal Zone; member of the National Medical Association of Panama; in 1927 at the annual session of the American Medical Association in Washington, in collaboration with others, awarded a Bronze Medal for an exhibit illustrating the diagnosis, etiology and pathology of infection with *Endameba histolytica*, and at the 1934 session in Cleveland, also with others, the Class II Gold Medal for excellence of presentation of an exhibit illustrating diagnosis and pathology of human anebiasis; decorated with a diploma of Merit by the Republic of Ecuador; died in the Hospital Santo Tomas, Panama City, November 29, aged 52, of lymphosarcoma.

Elmer Lawton Kenyon * Chicago; Rush Medical College, Chicago, 1896; retired in 1937 with the rank of associate clinical professor emeritus of laryngology and otology at his alma mater, where in 1910 he established the second clinic for disorders of the voice and speech in the United States; specialist certified by the American Board of Otolaryngology; one of the founders of the American Society for the Study of Disorders of Speech, now the American Speech Correction Association, of which he had been president from 1928 to 1932; president of the Chicago Laryngological and Otolological Society in 1919, the Jackson Park Branch of the Chicago Medical Society, 1917-1918, and of the alumni association of Rush Medical College, 1922-1923; member of the American Laryngological Association; member of the House of Delegates of the American Medical Association in 1917; fellow of the American College of Surgeons; discovered the function of the extrinsic musculature of the larynx, in addition to various other contributions to this field; author of section "Defects of Speech of Congenital, or Developmental Origin" in *Abt's Pediatrics*, 1925; died February 1, aged 79, of cerebral hemorrhage and arteriosclerosis.

Mark J. Schoenberg * New York; Universitatea din Bucuresti Facultatea de Medicina, Rumania, 1900; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology and the American Ophthalmological Society; founder and president of the New York Society for Clinical Ophthalmology; chairman of the committee on glaucoma of the National Society for the Prevention of Blindness; in 1914 received the Lucien Howe Medal of the Medical Society of the State of New York for essay on "Contribution to the Experimental Study of Ocular Anaphylaxis"; for many years instructor in ophthalmology at the Columbia University College of Physicians and Surgeons; served as consulting surgeon to the Manhattan Eye, Ear and Throat Hospital; consultant ophthalmologist at the Bronx Hospital and the Presbyterian Hospital; attending surgeon at the Herman Knapp Memorial Hospital for many years, serving as chief in the glaucoma clinic until his retirement as surgeon emeritus; member of the board of editors of the *Sight-Saving Review*; died in the Mount Sinai Hospital February 15, aged 70.

Thomas Aloysius Martin, New York; Columbia University College of Physicians and Surgeons, New York, 1900; member of the American Medical Association; fellow of the New York Academy of Medicine; member of the executive committee of the American Heart Association; formerly adjunct professor of therapeutics at the Fordham University School of Medicine and clinical professor of medicine at the New York University College of Medicine; served overseas with the Harlem Hospital unit of the U. S. Army during World War I; medical director and for many years visiting physician at St. Vincent's Hospital, where he was chairman of the school of nursing committee; on the staff and formerly medical director of the Harlem Hospital; on the staffs of the Columbus Hospital, French Hospital and New York Infirmary for Women and Children; died January 5, aged 71, of cerebral hemorrhage.

Albert Joseph Bertram, Miami, Fla.; Jefferson Medical College of Philadelphia, 1912; interned at the Lancaster General Hospital, Lancaster, Pa.; a licensed pilot; served as a director of the Greater Miami Airport Association and as chief starter for all the races in connection with the All American Air Maneuvers; member of the American Medical Association; commissioned lieutenant commander in the medical corps, U. S. Naval Reserve, on May 31, 1938 and commander (temporary) on July 13, 1942; aviation medical examiner and flight surgeon; served at Gaudalcanal, where he was wounded; the recipient of the Purple Heart; placed on the retired list as a result of physical disability on Feb. 14, 1944; died in the U. S. Naval Hospital, Bethesda, Md., Nov. 4, 1944; aged 53, of coronary thrombosis.

William Irving Wiggin * Lowell, Mass.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1901; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology and the New England Otolological and Laryngological Society; fellow of the American College of Surgeons; vice president of the Middlesex North District Medical Society; formerly instructor in laryngology at the Harvard Medical School, Boston; served overseas for eighteen months with a Red Cross unit during World War I; consultant surgeon, Massachusetts Eye and Ear Infirmary, Boston; on the staff of the Lowell General Hospital, where he died January 3, aged 65, of mesenteric thrombosis.

John Joseph Laughlin, Mount Carmel, Pa.; Georgetown University School of Medicine, Washington, D. C., 1935; interned at the Mercy Hospital in Wilkes-Barre; served a residency at the Ashland State Hospital, Ashland, and the Pennsylvania State Tuberculosis Sanatorium number 1 in South Mountain; commissioned a first lieutenant in the medical corps, Army of the United States, on Sept. 14, 1942 and served until relieved from active duty on Jan. 13, 1944; received a medical discharge on Feb. 4, 1944; assistant surgeon at the Bethlehem Steel Company, Sparrows Point, Md.; died in the Geisinger Memorial Hospital, Danville, December 2, aged 36, of carcinoma of the head of the pancreas.

Nathaniel Holder Adams * Oak Park, Ill.; Northwestern University Medical School, Chicago, 1896; also a pharmacist; died January 20, aged 74, of respiratory paralysis due to amyotrophic lateral sclerosis.

Arthur Elmer Ballard, Belton, Texas; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1905; member of the American Medical Association; director of the Central Texas Health unit; formerly officer of the Laredo-Webb County Health Unit; part owner of the Belton General Hospital; died in Lockhart December 30, aged 67, of heart disease.

Walter Herman Becker, Portland, Ore.; Willamette University Medical Department, Salem, 1907; died in the Good Samaritan Hospital December 27, aged 70, of coronary occlusion.

John William Henry Belote, Wills Point, Texas; University of Tennessee Medical Department, Nashville, 1901; member of the American Medical Association; died in Fort Worth, December 14, aged 77, of myocarditis.

Frederick Binder, Corning, Iowa; St. Louis University School of Medicine, 1911; member of the American Medical Association; chairman of the board of municipal utilities; died in the Clarkson Hospital, Omaha, October 17, aged 69.

John Ambrose Clark Busby, Oak Park, Ill.; University of Nebraska College of Medicine, Omaha, 1921; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; member of the American Medical Association, Central Association of Obstetricians and Gynecologists, the Chicago Gynecological Society and the Oak Park Physicians' Club; senior member of the obstetric staff, West Suburban Hospital, where he died January 5, aged 51, of cerebral hemorrhage.

James W. Charters, Buffalo; University of Buffalo School of Medicine, 1895; for many years surgeon for the New York Central Railroad; member of the courtesy staff of the Millard Fillmore Hospital; died January 1, aged 74, of coronary thrombosis.

James Henry Clark, Montclair, N. J.; College of Physicians and Surgeons, New York, 1881; member of the American Medical Association; for thirty-four years police surgeon in Newark; for many years on the staffs of St. Michael's Hospital and the Hospital of St. Barnabas and for Women and Children in Newark; member of the William Pierson Medical Library Association and the Newark Historical Society; died January 1, aged 89, of chronic myocarditis.

Joseph Howard Cooper @ East Millstone, N. J.; Medico-Chirurgical College of Philadelphia, 1891; school physician; on the courtesy staff of the Somerset Hospital, Somerville, where he died December 31, aged 77, of coronary occlusion.

Robert Lee Downey, Monticello, Ark. (licensed in Arkansas in 1906); died December 16, aged 71, of injuries received in an automobile accident.

Edward Herman Eyerman @ St. Louis; St. Louis College of Physicians and Surgeons, 1898; on the staffs of the Lutheran and St. Anthony's hospitals; died January 2, aged 70, of coronary thrombosis.

James Francis Faulkner, New York; Harvard Medical School, Boston, 1913; member of the American Medical Association; decorated for service during World War I; died in the New York Hospital January 1, aged 60, of acute pyelonephritis of the remaining left kidney.

Henry Louis Field, St. Louis; Marion-Sims College of Medicine, St. Louis, 1891; died November 22, aged 84.

Reuben Harrison Fields, Gardiner, Ore.; Southern Homeopathic Medical College, Baltimore, 1897; member of the American Medical Association; served during World War I and as a member of the American Red Cross in Siberia; formerly on the staff of the Keizer Brothers Hospital, North Bend; died December 9, aged 71, of coronary thrombosis.

Alexander D. Ghiselin Sr., Southbury, Conn.; Marion-Sims College of Medicine, St. Louis, 1894; veteran of the Spanish-American War; died January 6, aged 72, of heart disease.

George Harper Holt @ Cincinnati; Miami Medical College, Cincinnati, 1902; on the staffs of the Bethesda Hospital and the Christ Hospital, where he died December 31, aged 71, of diabetes mellitus.

Willoughby E. Kittredge, Napoleonville, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1899; died in New Orleans December 23, aged 71, of bronchopneumonia.

Eli French Knox, Lexington, Ky.; Hospital College of Medicine, Louisville, 1905; died in the Good Samaritan Hospital December 17, aged 77, of arteriosclerotic heart disease.

Lemuel Weyher Kornegay @ Rocky Mount, N. C.; North Carolina Medical College, Davidson, 1906; honorary member of the Medical Society of the State of North Carolina; a founder and chief surgeon of the Rocky Mount Sanitarium; died December 18, aged 63, of coronary occlusion.

Michael Saul G. Landa, New York; University of Dorpat Faculty of Medicine, Russia, 1900; member of the American Medical Association; died January 1, aged 70, of heart disease.

Martha A. McCullough Link @ Dubuque, Iowa; Milwaukee Medical College, 1909; died in the Mercy Hospital December 1, aged 59, of fibrosarcoma of the left shoulder.

William Franklin Lockwood, Edwardsburg, Mich.; the Hahnemann Medical College and Hospital, Chicago, 1894; died December 3, aged 80, of senility.

George Henry Martin, Pasadena, Calif.; Boston University School of Medicine, 1881; at one time professor of mental and nervous diseases at the Hahnemann Hospital College of San Francisco; died December 16, aged 85, of arteriosclerosis and senility.

Nall Carroll McCown, Forrest City, Ark.; Louisville and Hospital Medical College, Louisville, Ky., 1908; member of the American Medical Association; past president of St. Francis County Medical Society; served as city and county health officer; veteran of the Spanish-American War and World War I; died November 25, aged 61, of acute hepatitis.

Alfred Clifton McDaniel, San Antonio, Texas; Bellevue Hospital Medical College, New York, 1892; member of the American Medical Association; died in the Nix Hospital December 11, aged 78, of coronary occlusion.

Horace Walton McKim, La Belle, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1887; died in the Blessing Hospital, Quincy, Ill., December 12, aged 79, of chronic interstitial nephritis.

Ransley Jacob Miller @ Topeka, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1913; served in France and Germany during World War I; served as acting health officer of Topeka; city physician; died in Christ's Hospital December 16, aged 55, of coronary occlusion.

Verlando Ziegler Miller, Brookville, Ohio; Starling Medical College, Columbus, 1896; died December 23, aged 83, of senility and coronary occlusion.

James M. Ogle, Frisco, Texas (licensed in Texas under the Act of 1907); served as mayor of Frisco; died December 10, aged 74, of coronary occlusion.

Fermin Ralph Orella, San Francisco; Cooper Medical College, San Francisco, 1892; member of the American Medical Association; fellow of the American College of Surgeons; formerly on the staff of the French Hospital; died in St. Francis Hospital December 4, aged 76, of arteriosclerotic heart disease.

Frank Diah Peterson, Cutchogue, N. Y.; College of Physicians and Surgeons, New York, 1891; member of the American Medical Association; formerly coroner and health officer of Southold; served on the staff of the Eastern Long Island Hospital, Greenport; died December 27, aged 75, of chronic nephritis and arteriosclerosis.

Vinton Joel Rickerd, Charlotte, Mich.; Starling Medical College, Columbus, 1896; member of the American Medical Association; died December 27, aged 68, of coronary thrombosis.

George Allen Ricketts, Osceola Mills, Pa.; Jefferson Medical College of Philadelphia, 1908; member of the American Medical Association; served as president of the board of education of Osceola Mills; fellow of the American College of Physicians; chief of medical staff, State Hospital, Philipsburg; died December 6, aged 71, of cerebral embolism.

Elmo Ray Royer @ North Salem, Ind.; Physio-Medical College of Indiana, Indianapolis, 1903; served during World War I; died in the Methodist Hospital, Indianapolis, December 31, aged 69, of pericarditis and myocarditis.

William Fred Scott @ Maywood, Ill.; Rush Medical College, Chicago, 1892; formerly clinical professor of surgery at Loyola University School of Medicine, Chicago; in 1939 the members of the staff of the Oak Park Hospital, Oak Park, presented an oil portrait of him to the hospital, where for many years he was chief of staff; died January 18, aged 75, of coronary occlusion.

Walter Augustus Shaw, Springfield, Mass.; Baltimore Medical College, 1906; for many years a school physician; a member of the staff of the Wesson Memorial Hospital; died in the Springfield Hospital December 23, aged 65, of hypostatic pneumonia, decompensated heart disease and coronary sclerosis.

Ulysses S. Leroy Shirkey, Cleveland; Columbus Medical College, 1891; died January 8, aged 82, of coronary thrombosis.

Fred Alexander Snowden, Batavia, N. Y.; New York University Medical College, 1898; member of the American Medical Association; formerly coroner of Westchester County and health officer of Peekskill; head of the x-ray department of the Genesee Memorial Hospital; died January 6, aged 67, of cerebral hemorrhage.

Silas Jackson Stottlemeyer @ Anderson, Ind.; Bennett Medical College, Chicago, 1911; formerly coroner of Madison County; on the staff of St. John's Hospital, where he died January 3, aged 65, of essential hypertension and cerebral hemorrhage.

Calvin Guy Stricklin, Clarendon, Texas; Baylor University College of Medicine, Dallas, 1914; member of the American Medical Association; died in the Northwest Texas Hospital, Amarillo, December 2, aged 59, of coronary occlusion.

Evangeline Wilson Young, Framingham, Mass.; Tufts College Medical School, Boston, 1906; died December 20, aged 70, of cerebral hemorrhage.

Abraham Mason Zaring, Louisville, Ky.; Hospital College of Medicine, Louisville, 1898; died in St. Joseph Infirmary December 28, aged 74, of pneumonia and nephritis.

PUBLIC HEALTH SERVICE

Stephen Andrew DeMartini @ Senior Surgeon, U. S. Public Health Service, Cleveland; College of Physicians and Surgeons, Baltimore, 1915; captain in the medical corps of the U. S. Army during World War I, in charge of a military unit in France; served in the U. S. Public Health Service Reserve, being commissioned in 1930 to the rank of surgeon in the regular corps; in 1939 promoted to the rank of senior surgeon; for many years served for varying periods at U. S. Marine hospitals at Port Townsend, Wash., Chelsea, Mass., and Stapleton, N. Y.; on Aug. 26, 1936 transferred to the U. S. Marine Hospital in Cleveland, where he was chief of the surgical service and where he died December 23, aged 57, of coronary thrombosis.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Broken Steel Drill Left in Humerus to Serve as Peg.—The patient suffered a transverse comminuted fracture of the humerus of his right arm. The physician to whom he went tried unsuccessfully twice within four days to reset the fractured bone. The defendant physician, Whittaker, was then called into the case and on March 12, 1935 performed an open reduction and thereafter seems to have rendered necessary postoperative care. Some weeks later, when it appeared that there was not enough callous formation to form a union, a bone graft became necessary and was performed June 19. In performing that operation it was necessary to attach a graft taken from the plaintiff's right tibia to the severed parts of the broken bone in the arm, and Whittaker planned to accomplish this by using four ivory screws, two above the break and two below. To insert the ivory screws it was necessary to use a steel drill to bore four holes through the graft bone and into the humerus in which the screws could be set. This was accomplished as to three of the ivory screws; but in boring the fourth hole the steel drill was broken, and a portion of the drill about 1½ inches long, which extended through the graft bone and into the humerus, was allowed to remain. There was undisputed medical testimony that in so doing the physician was using his judgment in determining whether it would be better for the patient and the success of the operation to remove the broken portion of the drill, or to allow it to remain in the bone and to serve the purpose of an ivory screw. Further, there was undisputed medical testimony that for the purpose of fixation of a graft bone to an injured member other means than ivory screws are used and that such practice is proper. After this last operation the patient continued under the physician's care until some five years later. The physician from time to time dressed the injured member and applied different types of slings or casts to hold the arm in place. The patient suffered from pain, and by December 1935 a small sinus developed from which pus exuded intermittently until September 1940, when the patient removed from the sinus with a pair of tweezers a piece of the broken steel drill. Three months later one of the ivory screws used in the bone graft procedure also came out from the site of the incision. Soon thereafter the plaintiff's condition improved and the pus drainage gradually subsided and then ceased. Subsequently the patient instituted action for malpractice against the physician, charging lack of proper care on the part of the physician and a lack of exercise of good judgment and professional skill in leaving the broken portion of the drill in his arm. There was no medical expert testimony adduced in support of his claims, and as the trial developed it became apparent that the claim of negligence was confined to the leaving of the broken drill in the bone. At the close of all the evidence the trial court directed a verdict in favor of the physician because there was no competent testimony to support the claim that the leaving of the drill in the bone constituted malpractice. The patient then appealed to the Supreme Court of Michigan.

The patient contended that, notwithstanding his failure at the trial to sustain his claim of malpractice on the part of the physician by the testimony of any medical witness, he was nevertheless entitled to go to the jury on the record made by his own testimony, relying on *Balance v. Dunnington*, 241 Mich. 383, 219 N. W. 329, and *LeFaive v. Assefin*, 262 Mich. 443, 247 N. W. 911. The syllabus in the *LeFaive* case read as follows:

In action for malpractice, based on surgeon's failure to remove needle after performing operation for appendicitis, it was not necessary for plaintiff to show by expert witnesses that it was not good practice to sew up incision without removing needle.

Authority will be found, said the court, in support of the proposition that under certain circumstances, such as disclosure to the mind of the layman failure to perform professional duty properly, there may be a recovery in malpractice cases notwith-

standing no expert testimony is produced in support of the claim of the patient. But, in our opinion, these holdings constitute an exception to the general rule that malpractice may ordinarily be proved only by the testimony of those skilled in the particular field in which the malpractice is charged to have occurred. Our review of the record in this case, however, brings the conclusion that this case does not fall within that exception. While the patient charges a lack of proper care and a lack of exercise of good judgment and professional skill in leaving the broken drill in his arm, he did not offer in support of this claim any expert testimony such as is required in cases of this character. Nor was any such testimony developed on the cross examination of the medical witnesses who testified for the physician. Clearly the question as to whether or not proper care and attention was given by the physician at any time after his services to the patient first began is an issue requiring expert testimony for its determination. And likewise whether the physician in using his judgment in leaving the broken piece of the drill in the patient's arm to serve in lieu of an ivory screw to hold the bone splint in place was such a breach of professional duty as under the circumstances constituted malpractice could be determined only from the testimony of medical experts. But in this record there is no competent testimony of lack of proper care; and each of several experts as defendant's witnesses testified in substance that defendant's use of his judgment in leaving the broken piece of drill in plaintiff's arm to serve in lieu of an ivory screw was, under the circumstances, in accordance with the usual and ordinary practice of physicians and surgeons in the community skilled in the art of bone surgery. On this phase of the case in response to a question of the foregoing purport an orthopedic surgeon and a professor of surgery in the University of Michigan Medical School testified:

My answer to that would be, it rests entirely on the judgment of the doctor. My answer is, it was a practice which is the custom and one which is good, which was followed.

Accordingly the judgment in favor of the physician was affirmed.—*Zanzon v. Whittaker*, 17 N. W. (2d) 206 (Mich. 1945).

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL*, March 3, page 542.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Part III. Various centers, June. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: Oral, New York, June 13-17. Final date for filing application is March 15. Sec., Dr. Paul M. Wood, 745 Fifth Ave., Room 1503, New York 22.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: New York, June 8-9. Final date for filing application is March 12. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: Written, Oct. 15. Final date for filing application is Aug. 1. Candidates in the armed forces may take the examination at their station with the permission of their medical commanding officer. Asst. Sec., Dr. W. A. Werrell, 1301 University Ave., Madison 5, Wis.

AMERICAN BOARD OF OBSTETRICS & GYNECOLOGY: Part II. Oral, Atlantic City, June 13-19. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

AMERICAN BOARD OF OPHTHALMOLOGY: New York, June 13-16; Chicago, Oct. 4-6; and Los Angeles, January. Sec., Dr. S. Judd Reetz, 56 Ivie Rd., Cape Cottage, Me.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Part I. Oral and Written, New Orleans, Sept. 28-29, New York, Oct. 5-6, Chicago, Oct. 12-13 and San Francisco, Oct. 19-20. Final date for filing application is August 1. Sec., Dr. G. A. Caldwell, 3501 Prytanis St., New Orleans 15.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 3-6. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City, Ia.

AMERICAN BOARD OF RADIOLOGY: Oral, New York, June 3. Final date for filing application is May 1. Sec., Dr. B. R. Kirklin, 162-114 Second Ave. S.W., Rochester, Minn.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1935 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Archives of Otolaryngology, Chicago

40:433-530 (Dec.) 1944

Nasal Septum Plastic Repair of the Deviated Septum Associated with a Deflected Tip. A. P. Seltzer.—p. 433

Cystadenoma of Larynx: Report of 4 Cases. F. A. Figs, W. D. Rowland and G. B. New.—p. 445.

*Surgical Treatment of Atrophic Rhinitis. L. W. Eisenstodt.—p. 451. Mechanisms of Ocular Movement in Man. Influence of Vestibular Apparatus. H. B. Perlman and T. J. Case.—p. 457.

Aviation Deafness. P. W. Malone.—p. 468.

The Aging Ear. E. P. Fowler.—p. 475.

Sulfonamide Compounds in Treatment of Infections of Nasal Sinuses. E. J. Whalen.—p. 481.

Bronchial Adenoma with Metastasis. H. I. Laff and K. T. Neuburger.—p. 487.

Ephora of Nasal Origin: Simple Method of Treatment. G. L. Tremble.—p. 494.

Thrombophlebitis of a Cavernous Sinus Following Extraction of Teeth: Cure with Penicillin and Heparin. I. H. Wiesenfeld and E. Phillips.—p. 497.

Progress in Otolaryngology: Summaries of the Bibliographic Material Available in the Field of Otolaryngology. Otitis Media and Complications. B. R. Dysart.—p. 504.

Surgical Treatment of Atrophic Rhinitis.—Eisenstodt advocates an operation in which only preserved septal cartilage is employed. The cartilage is obtained from patients on whom submucous resection has been performed and is thus free of perichondrium. The cartilage is washed in sterile saline solution and is stored in 70 per cent alcohol. The principle of the operation, as in all the previous ones, is to diminish the air space in the nose, in addition to diminishing the quantity of air entering the nose. Preserved septal cartilage may be implanted on each side of the cartilaginous and bony nasal septum without necrosis of the mucoperichondrial flaps. Patients with moderate atrophic rhinitis and those with ozena obtain immediate relief from this procedure. The results are better if, in addition to transplanting preserved septal cartilage into the septum, a rhinoplasty is performed. The associated atrophy of the upper respiratory tract is also improved by the advocated nasal operation.

Journal of Nutrition, Philadelphia

28:383-460 (Dec.) 1944

Study of Plasma Ascorbic Acid Values with Relation to Type of Diet Used in Puerto Rico by Groups of Individuals of Widely Varied Economic Status. H. L. Munsell, A. Maria Cudros and R. M. Suarez.—p. 383.

Dietary Anemia in Pigeon. H. R. Street.—p. 395.

Complex Carbohydrates of Some Chinese Foods. L. C. Kung.—p. 407. Variation in Ascorbic Acid Requirements for Saturation of 9 Normal Young Women. Alice B. Kline and Mary S. Lhearn.—p. 413.

*Effect of Spray Drying and Subsequent Storage of Dried Product on Vitamin A, D and Riboflavin Content of Eggs. C. A. Denton, C. A. Cabell, H. Bystron and R. Davis.—p. 421.

*Vitamin C Content of Wild Greens. H. C. Murray and R. Stratton.—p. 427.

Study of Canine Hysteria Produced by Feeding Certain Baked Dog Foods and Wheat Gluten Flour. J. R. Wagner and C. A. Elchjem.—p. 431.

Atwater System of Calculating Caloric Value of Diets. L. A. Maynard.—p. 443.

Effect of Spray Drying on Vitamin Contents of Eggs.—Denton and his associates estimated the vitamin A content of emulsified and spray dried eggs by biologic and spectrophotometric methods, the vitamin D content by a biologic method and the riboflavin by a microbiologic method. The

results indicate that no loss of these vitamins occurred during the spray drying process. Vitamin D and riboflavin are stable in the stored dried products, whereas vitamin A is lost fairly rapidly, especially at higher storage temperatures.

Vitamin C Content of Wild Greens.—Murray and Stratton point out that a number of native wild plants are useful additions to wartime diets as greens or salad plants. They report assays of the vitamin C content of a number of the commonest of these edible wild plants, the tests involving both fresh samples, those which had been placed in frozen storage for several weeks before testing and those which had been cooked. It was found that pokeweed, tall dock and curly dock contained twice as much vitamin C as spinach; poverty weed, shepherd's purse and lamb's quarter about as much as spinach; thickweed, dandelions and prickly lettuce considerably less than spinach. Loss of vitamin C in wild greens due to freezing or cooking was comparable to the loss sustained under similar conditions by cultivated greens. There was some indication that the vitamin C content was greater in plants exposed to full sunlight and in fertile, uncultivated soil.

New York State Journal of Medicine, New York

44:2639-2764 (Dec. 15) 1944

Symposium: Etiology, Diagnosis, Treatment and Prognosis of Essential Hypertension: Medical Treatment of Uncomplicated Hypertensive Vascular Disease. D. W. Atchley.—p. 2683.

Observations on Certain Less Well Established Investigations on Hypertension. I. H. Page.—p. 2686.

Ocular Fundi in Essential Hypertension, Pre- and Postoperative. H. S. McKeown.—p. 2692.

Surgical Treatment of Hypertension: Some Circumstances Under Which Lumbodorsal Sympathectomy Appears to Be Inadvisable in Hypertensive Patients. R. H. Smithwick.—p. 2693.

Biochemical Factors Influencing Wound Healing. M. Bruger.—p. 2701.

War Wounds of Colon and Rectum. J. E. Hamilton.—p. 2705.

Public Health Reports, Washington, D. C.

59:1603-1634 (Dec. 15) 1944

Pathologic Reactions in Guinea Pigs to the Humphreys' Virus Strain. T. L. Perrin and E. A. Steinhaus.—p. 1603.

Notes on State Legislative Provisions for Temporary Licensing of Physicians. Adela Stucke.—p. 1609.

*Infectious Hepatitis: Experimental Study of Immunity. J. W. Oliphant.—p. 1614.

Immunity in Infectious Hepatitis.—Oliphant points out that homologous serum jaundice and infectious hepatitis clinically and pathologically are indistinguishable. However, the incubation period of spontaneous infectious hepatitis is about thirty days; that of homologous serum jaundice is usually much longer. This is unexplained. The author presents studies which indicate that recovery from homologous serum jaundice results in immunity to reinoculation with serum from acute cases of infectious hepatitis or with icterogenic yellow fever vaccine, and that the immunity persists for at least twelve to eighteen months. Pooled serums from 2 patients, drawn one to three months following recovery from homologous serum jaundice, when mixed with icterogenic serum failed to protect 1 of 10 persons inoculated with this mixture.

59:1635-1660 (Dec. 22) 1944

*Studies on Neuromuscular Dysfunction: I. Neostigmine Therapy of Neuromuscular Dysfunction Resulting from Trauma. II. Neostigmine Therapy of Hemiplegia, Facial Paralysis and Cerebral Palsy. III. Neostigmine Therapy of Chronic Rheumatoid Arthritis and Subacromial Bursitis. H. Kabat.—p. 1635.

59:1661-1692 (Dec. 29) 1944

Relative Resistance to Escherichia Coli and Eberthella Typhosa to Chlorine and Chloramines. Elsie Wattie.—p. 1661.

Studies of Antigens in Infected Yolk Sacs. M. J. Shear.—p. 1671.

Neostigmine Therapy of Neuromuscular Dysfunction.—Kabat employed neostigmine therapy in a variety of types of neuromuscular dysfunction. Patients selected were those with muscle spasm, contracture, paresis or muscular pain in whom there was no evidence of psychiatric involvement and in whom the disability had existed for a considerable time. These patients had had no spontaneous exacerbations or remissions and were either not improving or improving so slowly that the effect of therapy could be evaluated. The disability was not complicated by demonstrable anatomic lesions such as ankylosis,

bony block, complete loss of innervation or active inflammation. Neostigmine was injected subcutaneously once or twice daily. The routine dose was 2 cc. of neostigmine methylsulfate 1:2,000 solution (1 mg.) together with atropine sulfate $\frac{1}{100}$ grain (0.65 mg.) or $\frac{1}{50}$ grain (0.43 mg.). The atropine was used to eliminate the unpleasant parasympathetic side effects of the neostigmine. Observations on 53 patients under this treatment revealed that improvement in range of motion, relief from pain and increase in strength and endurance may occur rapidly in cases of disability following trauma of hemiplegia and related neurologic conditions and of chronic rheumatoid arthritis and subacromial bursitis. The results have been encouraging enough to warrant further investigation. The mechanism of action of neostigmine in relaxation of muscle spasm or contracture, in relief of muscle, joint or nerve pain and in increasing the power of voluntary contraction of parietic muscles is not established. The inhibitory action of neostigmine on cholinesterase at the synapses in the central nervous system, as well as at the myoneural junction, may be of importance. Since the action of neostigmine on the central nervous system in man is inhibition of muscle tonus and the deep reflexes, it appears likely that the relaxation of muscle spasm is a manifestation of the central action of the drug. Such a central inhibitory action on muscular hypertonus is apparently effective regardless of whether the hypertonus is of peripheral origin, as in cases of trauma or arthritis, or of central origin, as in poliomyelitis and hemiplegia.

Southern Medical Journal, Birmingham, Ala.

37:679-746 (Dec.) 1944

- The Public's Obligation to the Medical Profession. J. A. Ryan.—p. 679.
Early Postoperative Walking: Superiority of Wire Sutures. J. W. Nixon.—p. 682.
Pathologic Lesions in Brain in Malaria. R. H. Rigdon.—p. 687.
Case of Probable Meningococcus Endocarditis Apparently Cured with Penicillin. S. L. Zimmerman and R. N. Barnett.—p. 694.
Acute Coronary Occlusion Associated with Paroxysmal Auricular Fibrillation: Report of Case. W. D. Stuebner.—p. 696.
Hypertensive Encephalopathy: Clinical Consideration. A. McNitt.—p. 698.
Human Intestinal Parasites in West Virginia Tuberculosis Institution. W. J. Habeeb.—p. 701.
Tuberculosis and Hyperthyroidism: Report of Case. S. Jacobs.—p. 703.
Newer Developments in Syphilis Therapy. L. J. Alexander and A. G. Schoch.—p. 705.
Acute Infections Polypneumonitis. J. M. Blumberg, V. P. Mahoney and S. U. Wenger.—p. 708.
Hyperinsulinism: S. Harris Jr.—p. 714.
Intestinal Perforations Due to Nonpenetrating Abdominal Trauma. J. R. Bunch.—p. 717.
Vesicovaginal Fistulae. W. H. Vogt.—p. 723.
Microsedimentation in Children. C. C. McLennan.—p. 726.
*Urticaria Due to Inhalant Substances: Phenomenon Rarely Appreciated. V. J. Derbes and H. T. Engelhardt.—p. 729.

Urticaria Due to Inhalants.—Derbes and Engelhardt report 2 cases in which urticaria resulted from inhalant substances. 1. A woman aged 42 had ragweed hay fever for six years. After the ragweed pollen had been in the air for a week or ten days, urticarial wheals began to appear. These were first noticed as erythematous areas on the face, and later diffuse edema of the face and generalized hives became manifest. These hives persisted throughout the ragweed season every year. This year, when the hay fever was adequately controlled by pre-seasonal treatment, the patient remained free also from urticaria. Every one who has administered various therapeutic extracts in desensitizing allergic patients recognizes that systemic reactions characterized by urticaria are by no means rare. 2. A boy aged 11 had ragweed asthma for three years. During this period exposure to the fumes of fresh paint invariably produced an attack of asthma associated with urticaria. The onset of both is within fifteen or thirty minutes after exposure. It is of interest that whereas the attacks of asthma are over within twenty-four hours, the urticaria persists three or four days after this momentary stimulus. Cases in which inhalant substances are the cause of urticaria are common and many more of them would be discovered if this mechanism was borne in mind in attempting to diagnose chronic urticaria. Sulzberger lists feathers, pollens, animal danders,orris root insecticides and sprays, ephedrine and other nasal sprays as well as various dusts and dyed materials of all descriptions as common inhalant causes of urticaria.

United States Naval Med. Bulletin, Washington, D. C. 43:1085-1312 (Dec.) 1944. Partial Index

- Eye Replacement by Acrylic Maxillofacial Prosthesis. P. J. Murphy and L. Schlossberg.—p. 1085.
Tantum in Immediate Repair of Traumatic Skull Defects: Method of Immobilizing the Wounded Brain. W. J. Gardner.—p. 1100.
Traumatic Hemothorax. J. D. Chono.—p. 1107.
Achalasia in Military Service: Treatment and Disposition. R. R. Hoffman.—p. 1111.
Pterygium Transplantation by Simplified Method. M. Gurley Jr.—p. 1114.
*Cold Hemagglutination Test in Diagnosis of Primary Atypical Pneumonia. A. A. Humphrey.—p. 1117.
Cold Agglutination Test: I. Studies on Naval Hospital Patients. II. Studies on Natives in Yaws Endemic Area. G. H. Fetterman, T. J. Moran and W. R. Hess.—p. 1128.
Mental Mechanisms and Morale Factors of Naval Recruits in Training. C. N. Baganz, R. J. Mearin and W. A. Woods.—p. 1137.
Cerebral Symptoms in Malaria. S. McGinn and J. T. B. Carmody.—p. 1152.
Hippuric Acid Liver Function Test in Relation to Malaria and Atabrine. J. K. McCorkle.—p. 1163.
Acute Infective Jaundice and Acute Hepatitis: 360 Cases at an Advance Base. M. I. Cohen.—p. 1166.
Observations on Malaria. D. A. Weeks.—p. 1171.
*Pathogenic Enteric Bacilli: III. The Shigella Group. L. A. Barnes.—p. 1178.
Dermatologic Conditions Prevalent in Tropical Areas: Treatment with Heavy Dosage of Ultraviolet Ray. K. Phillips and V. B. Bubler.—p. 1193.
Chemotherapy of X-Ray Radiation in Treatment of Cellulitis of the Head and Neck. S. S. Wald.—p. 1200.
Treatment of Skin Diseases on an Attack Transport: Use of Undecylenic Acid. W. J. McCann.—p. 1205.

Cold Hemagglutination Test in Primary Atypical Pneumonia.—Humphrey studied the reaction to the cold autohemagglutination test by 14 patients diagnosed as having primary atypical pneumonia. Of the 14 all but 1, or 93 per cent, showed positive reactions. No strong reaction was noted in a series of 80 controls who were largely patients with upper respiratory and pulmonary diseases. The first positive reactions were noted within four to eight days of the onset, but in instances the reaction might be delayed until the early part of the third week. The maximum titer usually occurred between the sixteenth and twenty-third days of illness and with but rare exception became weak or negative between the thirty-fifth and forty-fifth days. Clinically there was little relationship between the titer and the fever, although some parallelism existed between the test and the sedimentation rate and the x-ray findings. While the x-ray examination is often confirmatory, other laboratory aids, such as the sedimentation rate and leukocyte count, have proved to be of little value in the diagnosis. It seems probable that the only procedure with any degree of specificity for the disease may be the cold autohemagglutination test. A disadvantage is the fact that the test is not consistently positive in the first week of the illness. However, most of the agglutination reactions for other diseases are positive no earlier.

Shigella Group of Enteric Bacilli.—An organism that is a nonmotile, gram negative, non-spore forming rod, fails to produce hydrogen sulfide, does not utilize citrate or liquefy gelatin, does not produce acetylmethylcarbinol or hydrolyze urea and ferments glucose without gas formation (with two exceptions) but fails to ferment salicin may be suspected of belonging to the Shigella group. There are three major points of differentiation between the Shigellas and the Salmonellas. The Shigellas are nonmotile, do not produce hydrogen sulfide and fail to form gas, whereas the majority of species of the Salmonellas are actively motile, produce large amounts of hydrogen sulfide and form large amounts of gas in the carbohydrate mediums. The lines of demarcation are not so sharp between the Shigellas and certain anaerogenic species of the paracolon and proteus groups. The present trend is to discard the older terms *Bacillus dysenteriae*, *Bacillus paradyenteriae* and the like for the more correct generic designation of Shigella, together with the type specific names. The genus Shigella comprises 20 species of medical importance that are fairly well differentiated by biochemical and serologic means; in addition there is a heterogeneous group formerly known as *Bacillus* dispar that has not been studied sufficiently to permit a species differentiation. The Shigella organisms enter the body through the ingestion of food or drink contaminated by the feces of patients or carriers. Nearly 3 per cent of convalescent carriers may excrete the organisms for more than three months. A

significant percentage of convalescent carriers may remain dangerous for a year. In acute dysentery stool cultures will usually yield the causative organisms, provided the specimens are obtained early in the disease and are subjected to laboratory examination within a short time after passage. In carrier surveys or in chronic conditions the rectal swab specimen is to be preferred. The specimen should be cultured on S-S (Salmonella-Shigella) agar plates. The most effective means of serologic diagnosis is through the use of absorbed, type specific antisera for their reactions on pure cultures isolated from fecal specimens. Efforts should be made to detect and isolate individuals excreting the organisms. The evidence incriminating flies in dissemination renders their control imperative. The prophylactic use of vaccines has been hampered by the lack of adequate data on the distribution of the various types of *Shigella* throughout the world, but recent developments have rendered the specific diagnosis of shigellosis relatively simple. It is possible that the prophylactic use of the sulfonamides may prove to be of value in control measures.

Virginia Medical Monthly, Richmond

71:603-654 (Dec.) 1944

- *Burns: Review of Cases Treated in Overseas Army General Hospital. B. J. Rawles and J. R. Massie.—p. 605.
Perinephric Abscess. J. H. Lyons.—p. 610.
Continuance of Symptoms After Surgery of Bihart Tract. E. T. Trice.—p. 614.
Feeding Problems in Infants. I. C. Grant.—p. 623.
Public Health. I. C. Riggins.—p. 627.

Burns Treated in Overseas Army General Hospital.—Rawles and Massie list as fundamentals in the treatment of burns (a) the prevention and control of shock, (b) the relief of pain, (c) the prevention and control of infection and (d) the prevention of contracture and excessive scarring by proper splinting and early skin grafting. The local surface treatment should be limited to a minimum amount of débridement and cleansing and, finally, the burned area should be covered with sterile petrolatum or, if this is not available, with boric acid ointment. A firm pressure dressing should be applied over this, which should not be changed for ten to fourteen days unless complications arise. The authors review observations on 78 patients with burns. Forty-two of the patients were grafted, a total of 63 operations being done. The preparation of third degree burned areas for grafting was often a real problem when much secondary infection was present. Dressings wet with isotonic solution of sodium chloride with fine mesh gauze next to the granulating wounds were applied on admission in nearly all cases, since an average time of thirty days had elapsed in those cases in which grafting was necessary. Slough was removed by sharp dissection if necessary. The skin around the wounds became macerated from the moisture, and since it had been felt that the dead debris probably acted as a culture medium this was cleaned away with neutral soap and water. All patients were given a high protein diet, multivitaminus and iron. A patient was not considered ready for skin grafting unless the plasma proteins were above 6.5 Gm. per hundred cubic centimeters and the red blood cell count was 4,000,000 or above. Fifteen of the 39 patients grafted received blood or blood plasma to bring their readings above the minimal levels. Split grafts are the best type from the standpoint of preventing further scar tissue and for furnishing a durable skin surface. They were used in 54 of the 63 operations. Pinch grafts were used in the other 9. In a few of the extensive wounds in which it was difficult to cut enough split grafts, pinch grafts were used to fill in gaps. Grafts were sutured in place with a slight overlap at the edges with a continuous suture of fine silk. Fine mesh gauze impregnated with an ointment was placed next to the grafts. Sterile gauze and mechanics' waste was next applied and an Ace bandage for pressure. In the case of extensive burns in which almost an entire extremity had to be grafted the percentage of takes was from 95 to 100. Poor results were obtained in the cases with relatively small granulating wounds which had been neglected because they were small, with the hope that they would heal over without grafting. As a result, scar tissue formed in the bed, which often did not prove to be a fertile field. This should bring home the necessity of covering the smallest of granulating wounds with epithelium.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:617-650 (Nov. 11) 1944

- *Acute Perforated Peptic Ulcer: Frequency and Incidence in West of Scotland. C. F. W. Illingworth and L. D. W. Scott.—p. 617.
Episiotomy. J. D. S. Flew.—p. 620.
Rapid Replacement of Fluid in Hemorrhage and Shock. J. D. P. Graham.—p. 623.
Underwater Blast Injuries of Abdomen. T. Moore.—p. 626.
Toxic Reactions After Administration of Paraldehyde. R. E. Hemphill and H. Heller.—p. 628.

2:651-682 (Nov. 18) 1944

- Studies on Hepatic Dysfunction: II. Value of Sulfur-Containing Amino Acids and Casein Digest in Prevention of Postarsphenamine Jaundice. J. Beattie and J. Marshall.—p. 651.
*Acute Perforated Peptic Ulcer: Frequency and Incidence in West of Scotland. C. F. W. Illingworth, L. D. W. Scott and R. A. Jamieson.—p. 655.
Experiences with Giant Magnet and Metallic Intraocular Foreign Bodies in Recent Battle Casualties. R. E. Wright and H. A. G. Duncan.—p. 658.
Latent Mastoiditis in Infancy. W. H. Patterson and G. Stewart Smith.—p. 659.
Secondary Abdominal Pregnancy. F. E. Stock.—p. 661.

Perforated Peptic Ulcer.—Illingworth and his associates obtained records of all perforations treated in hospitals of over 15 beds in the West of Scotland and in private practice during the year 1943. From 1924 to 1938 there was a progressive increase in the incidence of perforations. During the war the steady increase has been interrupted by a great rise in 1940-1941 followed by a return to a lower level. These changes almost entirely concern duodenal ulcer. The 1940-1941 rise was not correlated with air raids in this part of the country. It is suggested that, in addition to anxiety about the war situation, overwork and perhaps undernutrition may have exerted an influence. The sex ratio has undergone little change during the twenty year period. The rise in 1940-1941 and the fall in 1941-1942 were confined to men. Perforation is rare in childhood; its incidence rises rapidly in adolescence and attains a maximum between the ages of 30 and 40 years. Perforations are unduly common in December and relatively uncommon in August, September and October. This low incidence in the summer months may possibly have a nutritional basis or may be related to the holiday season. Perforations are less frequent on Sundays and Mondays than on other days. This may be related to rest at the week end. Perforations are unduly common between 3 p. m. and 6 p. m. and comparatively uncommon during the night and morning. There may be a correlation with periods of stress and rest respectively. The fatality rate from perforations increases with age and with delay in treatment. It is greater in gastric than in duodenal ulcer, in females than in males, in winter than in summer.

British Journal of Urology, London

16:81-124 (Sept.) 1944

- Local Pathology in Enuresis and Its Treatment. H. P. Winsbury-White.—p. 81.
Extrusion and Strangulation of Ureterocele: Case. D. A. Abernethy.—p. 103.
Pelviureteral Impaction of Ureteric Catheter. G. E. Moloney.—p. 105.

Medical Journal of Australia, Sydney

2:373-396 (Oct. 7) 1944

- *Bronchitis: Especially Chronic. R. S. Steel.—p. 373.
Cancer of Cervix Uteri, 1930-1942. H. H. Schlink and C. L. Chapman.—p. 377.
*Appendicitis in Its Relation to Pregnancy. B. Johnson.—p. 379.

Bronchitis.—Steel studied 500 histories from records in which a diagnosis of chronic bronchitis was made. The only selection in this series was to exclude patients suffering from active pulmonary tuberculosis and from primary myocardial degeneration. All patients presented themselves with the symptoms of cough, varying in duration from five weeks to fifty years, or of cough and sputum, or of frequent "colds" in the head and chest, or of cough with shortness of breath, or of "asthma." During acute exacerbations the findings resemble those of acute bronchitis, with or without pyrexia, increased

sputum and increased rales and rhonchi. An acute exacerbation, especially in the adult, may run an afebrile course. Of 100 patients in the hospital only 23 were febrile on their admission, and 7 were slightly febrile. The remaining 70 patients were afebrile. In observations on the aforementioned 500 patients and on the 100 patients in the hospital, no etiologic agent has been isolated. The organisms found in the sputum and in the material from bronchoscopic suction were those which normally inhabit the nasopharynx. It is highly probable that the causative agent is intimately associated, if not identical, with the virus of the common cold. The organisms found in the sputum are secondary invaders. Diseased tonsils and adenoids should be removed from children irrespective of age. Abrupt temperature changes precipitate acute exacerbations throughout the year. The "hardening process" advocated by many fathers of bronchitic children has a number of dangers. Clinical impressions from the use of vaccines indicate their value when given in small weekly doses and sufficient to produce only a local reaction.

Appendicitis and Pregnancy.—The incidence of appendicitis in women is not influenced by pregnancy, Johnson says. Primary acute appendicitis occurs at the same rate in all women irrespective of whether a pregnancy is present or not. Although primary acute attacks of appendicitis are rare in pregnancy, an existing chronic appendicitis is unfavorably influenced by it. The course of acute appendicitis during pregnancy is rapid and perforation may occur within a few hours, especially in the later months. Diagnosis becomes increasingly difficult after the sixth month. When doubt exists, operation should be performed if the patient's general condition is grave. With early operation the maternal prognosis is good, but if perforation has occurred a mortality rate of 50 per cent must be expected. There is little danger of abortion in simple cases, but after perforation 50 per cent of uteri will empty themselves, thus increasing the mortality by 5 per cent. In the last two months perforation is extremely dangerous both to mother and to child. Cesarean section followed by appendectomy is advocated as the procedure most likely to give good results. The type of cesarean section depends on the extent of involvement of the parietal and uterine peritoneum. If involvement is very severe, Porro's operation is safest. In most other cases the lower segment operation will be best. Whenever possible the diseased appendix should be removed if there is a possibility of the occurrence of pregnancy.

Acta Medica Scandinavica, Stockholm

113:1-108 (Jan. 20) 1943

Response of Blood Prothrombin to Vitamin K as a Measure of Hepatic Function. P. F. Hansen and H. Begtrup.—p. 1.

*Comparative Study of the Occurrence of Complications in Scarlet Fever Treated With Sulfanilamide, Specific Immune Serum and Normal Horse Serum, with a Reference to Certain Clinical Features of the Material. F. Neukirch, V. Zahle and I. Baumgarten.—p. 11.

Iron Content of Serum in Patients with Pernicious Anemia. K. Brochner-Mortensen.—p. 43.

"Pure" Astereognosis: Report of 2 Cases. E. Mindus.—p. 58.

*Causes of Xerostomia. M. Faber.—p. 69.

*Treatment for Raynaud's Disease with 2-Benzyl-4,5 Imidazoline (Prisol Ciba). T. Lindquist.—p. 53.

Treatment of Scarlet Fever With Sulfanilamide, Specific Serum and Horse Serum.—Of 1,347 patients with acute, uncomplicated scarlet fever admitted to the Blegdam hospital during 1940, 318 were treated with sulfanilamide, 295 with anti-scarlet fever streptococcus serum and 118 with normal horse serum. The control group of 616 patients did not receive treatment. Sulfanilamide was employed by Neukirch and his associates, patients up to the ages of 4 years receiving 0.3 Gm. four times, those from 4 to 14 years 0.6 Gm. four times and those over 14 years 0.9 Gm. four times for eight days. Sulfanilamide had a definite effect in preventing complications, especially of the type considered bacterial, such as otitis and its late sequel mastoiditis. The incidence of these two complications was 3.8 and 1.2 respectively as compared with the control group, in which it was 8.8 and 3.2 respectively. Adenitis was reduced by a third, as was arthralgia; the incidence of peritonsillar abscess was reduced by three fourths and recurrences by about one third. Sinusitis and nephritis were only slightly influenced, and there was no effect on myocarditis. The drug had little or no effect on complications in the low age group (0 to 3 years). Sulfanilamide treatment as a routine is recommended as follows:

The full dose employed by the authors is to be given during the first week and continued with half the dose for the next two weeks. The total dosage of sulfanilamide would therefore be about 20 Gm., 40 Gm. and 60 Gm. respectively in the age groups 0 to 3, 4 to 14 and over 14 years. Compared with the complications of the control group, those occurring in the sulfanilamide treated patients were delayed and in many cases appeared only when the sulfanilamide must be presumed to have been excreted. It seems likely that continued treatment would have the effect of reducing the complications still further, although untoward reactions may likewise be increased, since a larger number of patients may be sensitized. In the authors' cases these reactions were less frequent than those from serum treatment; they were less severe and less painful. Vomiting was observed in 23 cases (7.2 per cent). There was a rash in 41 cases (12.9 per cent) but never in the age group from 0 to 3 years, which comprised 65 patients. More serious reactions, such as leukopenia, severe hemolytic anemia and anuria, were not observed. Anti-scarlet fever streptococcus serum had no definite effect in preventing complications. Normal horse serum seemed to be ineffective. The clinical picture of this scarlet fever epidemic revealed that there may be a direct relationship between the toxicity of the initial phase and the incidence of complications, whereas there was no correlation between the incidence of complications and the degree of eruption and desquamation.

Causes of Xerostomia.—Faber reports 49 cases with reduced salivary secretion. In only one third of these could a definite diagnosis be easily made of the causes of reduced secretion. These were cases of diseases of the salivary glands, such as congenital aplasia of the parotid glands, epidemic parotitis, lymphogranuloma benigna and Mikulicz's syndrome. Roentgen treatment was the cause of decreased salivary secretion in 2 cases. In the rest it was possible to determine the cause of xerostomia in one half; these were cases of pernicious anemia, of sideropenic anemia and of ariboflavinosis. In some of the "idiopathic" cases a chronic inflammation was considered as maintaining a previously developed xerostomia. In the rest no cause could be given, but it is suggested that the reduced salivary secretion may depend on the endocrine glands, particularly at the time of the climacteric. In a rather large number of cases fissures in the corners of the mouth, atrophy of the mucous membrane of the tongue and pain in the tongue were found to be sequels of reduced salivary secretion.

Benzyl-Imidazoline in the Treatment of Raynaud's Disease.—Lindquist reports his experience with 2-benzyl-4,5 imidazoline hydrochloride in the treatment of 12 cases of Raynaud's disease of medium severity. Improvement in all cases was obtained from oral administration of the drug; 6 of the patients had no complaints, 3 had very little complaints and the condition of 3 additional patients was improved slightly. Untoward reactions such as vertigo and slight chills were of no importance. In 1 of the cases a dermatitis developed on the hands and feet. The eruption resembled that after prolonged histamine iontophoresis. The effect of benzyl-imidazoline was recorded by ascertaining the changes in the skin temperature at the finger tips. The patients remained at a room temperature of or slightly below 59 F. after their hands had been immersed in water of 59 F. A pronounced vasodilator effect was demonstrated on the hands of the patients to whom the drug was administered orally or intramuscularly before their hands had been immersed in the water, as compared with the hands of the controls. Treatment consisted in peroral administration of one tablet (0.025 Gm.) of the drug three times daily for several weeks. In some of the cases two tablets (0.050 Gm.) were given three times daily, and in addition a 10 per cent benzyl-imidazoline ointment was applied to the hands. There was no recurrence of the condition in some of the cases when the treatment was discontinued after the administration of forty tablets. Definite improvement in the blood perfusion of the fingers was obtained with the drug in an additional thirteenth case in which bilateral surgical removal of the inferior cervical ganglion, of the two superior thoracic ganglia and of the intervening portion of the sympathetic nerve had been performed some time before. The vasodilator effect in this case suggests that the blood vessels may be affected directly by the drug or through the sensory nerves.

Book Notices

Medical Uses of Soap: A Symposium. By G. Thomas Halberstadt, P.S., Ch.E., and others. Edited by Morris Fishbein, M.D. Fabrikoid. Price, \$3. Pp. 182, with 41 illustrations. Philadelphia, London & Montreal: J. B. Lippincott Company, 1945.

This is a collection of uniformly excellent articles which tell the story of soap—its use and abuse, its chemistry and manufacture, its effects on normal and diseased skin, on the hair, for shaving, in industry—indeed the material goes well beyond the confines "Medical Uses of Soap." The symposium presents the views and experiences of men in the varied fields of dermatology, chemistry, bacteriology and industrial medicine, so that there is some duplication of material with occasional differences of opinion, but the result is a practical consideration of the subject.

The opening chapter on soap technology considers the chemical and physical properties of all types of soaps: toilet bars, household soaps, even the newer soapless detergents. The next four chapters deal with the use of soap on skin and hair. Consideration is given to the effect of soap on normal and diseased skin and to those diseases for which soap is indicated or contraindicated. The section which considers soaps for industry and the industrial worker is also very practical and thoroughly covers the whole field—skin inurement, patch tests, soap formulas, hygiene of workers—and includes a recital of illustrative case histories. There is an interesting discussion on soap for shaving in which the formulas of the various types of shaving soaps are furnished, and here too there is a section devoted to the use of shaving soap in the presence of certain skin diseases. A decalogue of fallacies answers some of the questions occasionally asked by patients. A section on cutaneous detergents other than soaps brings the subject up to date. This chapter discusses the various soap substitutes that have recently been introduced, the formulas, reasons for being, their advantages and disadvantages, their present status, and closes with the statement that "clinical experience up to now indicates that these detergents will be more widely used when a low cost cake form is developed which will lather and which has satisfactory physical properties." The final chapter deals in a general way with the medical uses of soap, as in first aid; venereal diseases and hygiene. The clinical chapters are illustrated in black and white, and there is a full index. Altogether the book is an excellent presentation that the physician should find not only interesting but useful.

A New Principle in the Treatment of Poliomyelitis. By Otto Meyer. Vol. A44-P, International Bulletin for Medical Research and Public Hygiene. Editor-in-Chief: W. L. Colze. Paper. Pp. 11. New York, Brussels & London: International Bulletin, 1944.

This short monograph is bad enough to warrant serious condemnation, although it is almost unthinkable that any intelligent physician could be influenced by it. The author builds up the theory that poliomyelitis is a streptococcal infection; that streptococcal infections cause latent jugular phlebitis, which in turn causes increased spinal fluid pressure, which in turn causes symptoms of meningeal irritation and paralysis. All this can be prevented by the simple expedient of the application of three or four leeches over each jugular vein! The final plea of the author is that this method does not "conflict with any other treatment."

Gynecological and Obstetrical Urology. By Houston S. Everett, A.B., A.M., M.D., Associate Professor of Gynecology, the Johns Hopkins University, Baltimore. Cloth. Price, \$6. Pp. 517, with 220 illustrations. Baltimore: Williams & Wilkins Company, 1944.

This book, as its title implies, deals only with urology in women. The classification of the text is good, the subject and the chapters are well arranged and the many illustrations are excellent. This is especially true of the anatomic drawings. The book is easy to read, and at the end of each of the twenty-three chapters is a comprehensive bibliography. The book begins with a discussion of the anatomy and the physiology of the urinary organs, followed by a chapter on the relationship of urology to allied specialties. There are two chapters devoted to the various procedures in urologic examinations in which,

in our opinion, too much detail on cystoscopic technic is given and not enough space devoted to a discussion of the physiologic principles of excretory urography, which is an important subject in a book of this kind. The remaining eighteen chapters deal with various urologic diseases. It would seem that more space should have been given to pyelitis of pregnancy. On the other hand, three chapters are devoted to ureteral obstructions, of which ureteral stricture is discussed in great detail. The frequency of this condition is still a debatable subject among urologists. Although it is questionable whether anything of importance has been brought out in this book that is not included in any good general book on urology, the book can be recommended because of the completeness with which it has handled some of the urologic diseases that are common to women.

Malaria: Its Diagnosis, Treatment and Prophylaxis. By William N. Bispham, Colonel, U. S. Army. Retired. Cloth. Price, \$3.50. Pp. 197, with 5 plates. Baltimore: Williams & Wilkins Company, 1944.

With great numbers of the armed forces in tropical and semi-tropical areas and many chances to contract tropical diseases, it is important that the practitioner should be informed of the present status of one of the most important of these diseases. Dr. Bispham has done this by presenting the picture of malaria so that the practitioner will have a thorough, practical knowledge of the disease. The author's complete description in the chapters on pathology, symptomatology and treatment give a picture of the disease of its most recent advances up to the present time. Dr. Bispham has made use of the leading authorities to review many sections of the book and has also included an interesting chapter on the prevention and treatment of malaria in West Africa in recent years by Comdr. L. T. Coggeshall (MC), U.S.N.R. The volume is highly recommended to students, malariologists and practitioners.

Essentials of Pharmacology and Materia Medica for Nurses. By Albert J. Gilbert, M.D., Instructor of Pharmacology, Aultman School of Nursing, Canton, Ohio, and Selma Moody, R.N., Instructor in Nursing Arts, The Presbyterian Hospital of the City of Chicago. Second edition. Cloth. Price, \$2.50. Pp. 290, with 20 illustrations. St. Louis: C. V. Mosby Company, 1944.

According to the preface of the first edition, "the object of this little volume is to present the facts and theories of pharmacology and materia medica for nurses in a lucid, concise form, adapted to the limited time available for the course in many nursing schools. . . . Where the larger texts are used, this book may be helpful in reviewing pharmacology and materia medica." There are available a number of books intended for the nursing profession; some of them are unnecessarily complete, others are too brief and sometimes inaccurate. The authors of most of the books, however, apparently realize that the object in teaching pharmacology and materia medica for nurses is to provide information on how the drugs are used and what they may be expected to do; not to provide a book so complete in details that the nurse is receiving as thorough instruction as the medical student. Where to draw the line is a difficult decision in some instances, but the present book seems sufficiently brief to be not objectionable to the student nurse and yet sufficiently complete to provide necessary information, especially when the authors' warning concerning the concurrent use of textbooks is heeded. A few questionable statements appear, but the general conservative presentation compensates for such faults. One does wonder however if it is necessary to devote in a book of this sort fifteen pages to arithmetical problems. Particular emphasis is placed on official and new and nonofficial drugs, but some of the newer generally recognized drugs such as sulfamerazine and sulfapyrazine are not mentioned. The index seems adequate.

The Recording of Sickness Absence in Industry (A Preliminary Report). By a Sub-Committee of the Industrial Health Research Board. Medical Research Council, Industrial Health Research Board Report No. 83. Paper. Price. 4d Pp. 17. London: His Majesty's Stationery Office, 1944.

The Industrial Health Research Board, in recognition of the need for adequate industrial medical records, has issued these instructions for recording sickness absenteeism. All necessary forms and descriptions of procedure for entering and calculating statistical data are included. It performs for Great Britain what has been instituted in this country by the Division of Industrial Hygiene in the United States Public Health Service.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

SMALL STATURE OF THIRTEEN YEAR OLD GIRL

To the Editor:—A girl aged 13, 4 feet 8½ inches (143 cm.) tall and weighing 109 pounds (49 Kg.) is embarrassed at her small stature; in the last year she has not grown at all. She has normal pubic and axillary hair growths; her breasts are rather well developed; she has been menstruating for two years. Her parents are 5 feet 3 inches (160 cm.) tall and their parents were not much taller, although some of the child's uncles and aunts are tall. Do you feel that any medication is indicated?

Morris B. Schwartzfarb, M.D., Bronx, N. Y.

ANSWER.—It is probable that this girl is far enough along in adolescent development so that the epiphyses and diaphyses of the long bones have united and that further growth in height will not occur. Under such circumstances as described it is important that a simple x-ray film of the femur be made so that the epiphyses at either end can be seen: if the epiphyseal line shows that union is not yet complete, further growth may be achieved; if these epiphyses are united, no further growth is possible.

In case the epiphyses are found open and it is considered desirable to stimulate growth, it is important to look into the nutritional background and be certain that it is adequate in every way. The presence of chronic disease should be eliminated. Then the decision must be made as to whether the patient is clinically deficient in thyroid and if so this deficiency made up. Barring these three possibilities, there remains the attempt to stimulate growth with anterior pituitary extract. There is still some doubt as to the efficacy of pituitary derivatives, but clinical trials of special extracts, standardized by the manufacturers in their capacities to stimulate the growth of experimental animals, might be worth while. Such material is introduced hypodermically and must be used daily for really effective results; the achievement of growth could not be demonstrated in less than three months—perhaps in not less than six to twelve months.

VALVULAR MURMURS IN RHEUMATIC HEART DISEASE

To the Editor:—In a large percentage of patients with early rheumatic fever at this center a soft blowing systolic murmur is heard only at the third and fourth left interspaces just to the left of the sternum; or the murmur may be heard over the entire precordium but is heard best at the third and fourth left interspaces just to the left of the sternum. What valve or valves are involved, and what is the pathologic condition?

Noah N. Feldman, Lieut. Comdr. (MC), U.S.N.R.

ANSWER.—Soft blowing systolic murmurs heard only or heard best at the third and fourth left interspaces just to the left of the sternum are present in normal persons as well as in patients suffering from rheumatic fever (types 2 and 3 of Paul). The significance of such murmurs is extremely difficult to evaluate. The mechanism of the production of such murmurs in normal persons has never been satisfactorily explained. In patients suffering from rheumatic fever, the presence of such murmurs has been explained by an early lesion of the aortic valve (Hamilton and Thomson). Such murmurs are to be distinguished from high pitched, occasionally harsh systolic murmurs heard over the midprecordium, with maximum intensity in the region of the apex of the heart (type 1 of Paul). These are frequently found in patients suffering from active rheumatic carditis. The usual pathologic explanation for the latter variety is a dilatation of the mitral ring due to myocarditis, associated with roughening of the edges and commissures of the mitral valve.

The important point about systolic murmurs in the diagnosis of rheumatic fever is that alone they are an unreliable means for such diagnosis. On the other hand diastolic murmurs, i. e. a short early blowing murmur heard best over the second right interspace, over the sternum or over the third or fourth left interspaces, or a low pitched rumbling crescendo murmur followed by an accentuated first sound at the apex are highly significant in the diagnosis of rheumatic heart disease. Systolic murmurs are apt to be more significant when they change from day to day and are particularly significant when they appear during the course of rheumatic fever and were known not to have been present prior to that event. Thus the changing

character of the murmur, its harshness and its high pitched character, with maximum intensity in the region of the apex, tend toward a diagnosis of an organic lesion.

The relationship between the importance of a systolic murmur in the diagnosis of rheumatic fever and other symptoms and signs was well summarized by T. Duckett Jones in *The Journal*, Oct. 21, 1944, page 481. In that paper Dr. Jones stressed the difficulty of the diagnosis of rheumatic fever and separated the major criteria for diagnosis from minor criteria. One of his major criteria is carditis as determined by cardiac enlargement, significant murmurs, i. e. diastolic murmurs or apical high pitched systolic murmurs, pericarditis or the presence of congestive heart failure. In general symptoms and signs other than the type of murmur described in the question must be present to establish a diagnosis of rheumatic fever or rheumatic heart disease, since such murmurs are so often found in normal persons.

References:

- Paul, J. R., and other contributors: *The Epidemiology of Rheumatic Fever and Some of Its Public Health Aspects*, ed. 2, American Heart Association, Section B, pp. 143-145.
Hamilton, B. E., and Thomson, K. J.: *The Heart in Pregnancy and the Child-Bearing Age*, Boston, Little, Brown & Co., 1941, pp. 32-34 and 130.

BRONCHIAL ASTHMA AND TESTOSTERONE

To the Editor:—I am advised that testosterone has been used in the treatment of asthma of unknown cause with excellent results. Will you kindly advise me regarding this form of treatment?

Elmer W. Clarke, M.D., Norton, Mass.

ANSWER.—Although in many persons there is a relationship between the endocrine system and bronchial asthma, little benefit has resulted from the use of glandular products. References to the use of testosterone in the treatment of bronchial asthma have been meager. Two successful reports follow, but experience is so limited that optimism is not warranted:

The Cleveland Clinic (Allergy in Clinical Practice, Philadelphia, J. B. Lippincott Company, 1941, pp. 297-298) reports that a man aged 46 with sexual impotence had suffered from bronchial asthma for two years despite treatment. He then received testosterone propionate in 25 mg. doses three times weekly for the impotence: the asthma disappeared completely, except for an occasional "wheeze," and the potency returned to normal. The efficacy of the male sex hormone in controlling the asthma was demonstrated repeatedly: withdrawal of the therapy for as little as ten days resulted in a recurrence of the asthma, and three weeks without treatment terminated in severe asthma. When the patient was requested to have a complete allergic investigation he refused because his symptoms were controlled by androgen therapy.

La Fitte and Guttieres reported (*Bull. méd.*, Paris 54:284 [June 8] 1940) that a girl aged 19 years had suffered from severe asthmatic crises for six years. The asthma first appeared at the age of 3 years, was mild and disappeared after several months, not to reappear till the onset of menstruation at 13 years of age. Then she had severe asthmatic attacks always about eight hours before the onset of the menstrual flow. The menstruation was very painful, irregular and excessive in amount. No associated premenstrual breast pain or engorgement was experienced. No treatment had helped the asthma. Examination revealed no endocrine or genital abnormality; her general health was excellent. The authors tried testosterone, postulating a hyperfollicular syndrome: they gave five intramuscular injections of testosterone acetate without any other treatment. The asthma ceased, and she was given three monthly series of five injections each, from twelve to twenty days following menstruation, after which she had no asthmatic attacks and her menstrual periods became regular and painless. For the past six months, in spite of being without further treatment, she has been free from asthma and menstrual abnormalities.

AMMONIA AND THE NERVOUS SYSTEM

To the Editor:—I have 3 patients who were overcome with ammonia gas or fumes while at work; 3 of their companions died from the effect. The 3 who survived have eye injuries and pains in the abdomen; the most prominent symptom in all seems to be intense nervousness and hysterical excitement. Exposure occurred on Aug. 31, 1944, when the connection of a car of ammonia was broken while unloading. What are the pathologic effects of ammonia on the nervous system?

S. Ross Jones, M.D., Port Arthur, Texas.

ANSWER.—Ammonia is not considered to have a direct action on the central nervous system. The present condition of these patients is probably a neurologic and psychologic response to the tissue damage produced by the original acute exposure to ammonia gas and to the serious results of the original episode on their companions and themselves.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 127, No. 11

CHICAGO, ILLINOIS
COPYRIGHT, 1945, BY AMERICAN MEDICAL ASSOCIATION

MARCH 17, 1945

EPOCHS IN MEDICINE

THE IMPROVEMENT OF MEDICAL SERVICE TO LABOR

ERNEST E. IRONS, M.D.
CHICAGO

In the years previous to our present world war most of us were none too clear as to the changes in social and economic thinking that were insidiously creeping upon us. The stupendous war effort after Pearl Harbor, about which most of our daily activities now revolve, has still further diverted attention from the social and economic trends, which have been accelerated by the dislocations and modifications in living incident to the war. Some of these trends if properly guided will lead to salutary results for the nation; others if relegated to the hands of the ignorant may destroy the fruits of decades of effort. The real significance of still others is not immediately apparent without the aid of some perspective.

We can, however, get some notion of what the future has in store by looking back at the epochs of history, economic, social and medical. There we find almost exact parallels of many of our present problems, and from the experience of our forebears we can profit in the charting of our course.

Understanding of the epochs in medicine may be helpful in medical planning for our postwar period, especially with reference to the relations of medicine and labor.

The recent victories of medicine over disease in fields of infections and in surgery are deeply satisfying when compared in retrospect with what was possible in the prevention and cure of illnesses thirty years ago. Compared to the vast number of unsolved problems of disease, however, these victories are but local skirmishes in an age old battle and should serve only to stimulate and direct future effort. Nor are the problems of medicine limited to those of former years; there have been added those that have come as a result of alterations in the methods and weapons of war, and of the economic and social changes of peace.

Consecutive epochs of medicine cannot be clearly defined, but each shades into its successor as new knowledge has amplified and modified the conclusions drawn from previously known facts. The medicine of Hippocrates and Galen was a combination of limited observations and metaphysical reasoning, which allowed slow progress; it led to some sound and also to some queer conclusions and became stagnant under the domination of tradition and authority. The growth of anatomy, pathology and physiology in the seventeenth and eighteenth centuries slowly corrected false beliefs, and in the nineteenth century the beginnings of biochemistry and bacteriology made medicine more

rational and scientific. On this foundation of centuries the marvelously rapid progress thus far in the twentieth century was achieved.

These epochs of medicine are inextricably interwoven with those of the political and economic history of nations and follow a similar pattern. The events of one period carry over and condition those of succeeding periods. The aggrandizement of the rich at the expense of the poor laid the foundations for the French Revolution, which in turn went far beyond a reasonable correction of ills, by destruction of property and loss of valuable lives. Many of the abuses remained uncorrected and contributed to the unstable social and political conditions during the Napoleonic wars.

In England in the eighteenth century the introduction of mechanical devices and use of water and steam power in manufacturing together with new methods of transportation led to the collection of people in larger groups in cities and created new economic and social problems in collective living and likewise, though largely unrecognized at the time, new medical problems. The increased incidence of rickets was the result of living indoors in crowded tenement areas with the smoke of industry obscuring such sunlight as was available.

Much the same kinds of factors became operative here in our own political, economic and medical evolution of the nineteenth century. With respect to the general public welfare, they have been at once curative and disease producing. The intense industrialization of cities of the twentieth century has made possible our amazingly successful war effort but at the same time has accentuated the economic and social ills from which we were already suffering. The acute congestion in new war plant areas with housing shortages and ill provided and shifting populations has been met by some temporary expedients, which are acceptable in the absence of better and safer measures but cannot continue after the war. Nor will they be necessary, because to a large extent these populations will have gone elsewhere.

There remains with us the medical problem of proper care of all the people; who stem from many races and nationalities, some of which are still incompletely assimilated. This problem is intimately connected with our economic and social life. Medical inadequacies in many regions are coincident with and often are directly traceable to economic deficiencies. The cure of the medical defect can be accomplished only by simultaneous improvement of social conditions. Medicine can and will do much to help but cannot do it all.

Under our present system of medical free enterprise the steady growth in efficiency of medicine in the prevention and cure of disease is continuing from year to year. In large cities and congested areas, slum clearance and improved housing need medical cooperation but are primarily economic and social problems. Many rural areas receive insufficient medical care. The

remedy will no doubt include new hospital and diagnostic centers to be established under local, county and state control and if necessary the voluntary location of qualified physicians on temporary or partial but adequate salaries paid by governmental and other agencies. The populations themselves in such areas will require education as to their own needs as well as to the availability of the new facilities. Better distribution of physicians to these poor, backward or sparsely populated areas will be practicable under any plan only when it is made possible for the doctor to live and raise his family in reasonable comfort, with some cultural advantages for his children.

Voluntary insurance plans, including those sponsored by local groups, medical societies, hospital associations and large insurance companies, are growing daily in numbers and coverage, so that millions of workers are given protection against the hazards of illness. These measures of social and medical care are developing in an orderly way at an ever increasing tempo, with the elimination of unsound features as experience accumulates.

There are now those who sometimes with sincere intent but often actuated by political motives would revolutionize medical practice and thereby destroy standards which have already demonstrated their worth in giving this country the highest quality of medical care in the world. In place of a sound and progressive program, the advocates of socialized medicine urge that there be substituted a system of government enforced provision for medical care supported by a tax of 1.5 per cent on payrolls of the employer and 1.5 per cent more of the first \$3,000 deducted from the pay check of the worker, directed by a central bureau headed by the Surgeon General of the Public Health Service and served by doctors to be employed by the government and by hospitals selected by the government. This plan envisages the establishment of a bureaucracy far greater than any other in our government and presents also vast political possibilities. Such plans stifle initiative in the physician and at the same time reduce the level of quality of service for all. When such criticisms are made to advocates of government controlled medicine they reply that failure of their experiment, which involves the lives and welfare of one hundred million people and an annual expenditure of almost two billion dollars, is insignificant because they can then change it.

Says one of their spokesmen¹ "Distribution of medicine has always been faulty. The war has only brought it into sharp relief by the dislocation of populations, which has made it evident to us that our present system of distribution cannot be carried on. It has also shown us that local control is not satisfactory. The condition is particularly imminent at this moment and favorable to a change, because we shall also have to allocate and place in various parts of the country where they are most needed the medical officers who will return from the Army." And so they plan to ration by bureaucratic order the sixty thousand doctors on their return from fighting on foreign soil for the freedom of their homeland.

And "anyway," they say, "medicine must be entirely reorganized along new lines" and "cannot be left under the old patterns." This is the kind of unscientific and theoretical planning that a few vocal propagandists would impose on the American people and on the American doctor!

Audaciously they accuse physicians as being responsible for the glaring faults in their plans, saying that the doctors in general failed to cooperate with them in the formation of plans. Actually their whole program was conceived and delivered by a small group of armchair theorists including a few misguided doctors who had neither the experience in medical problems nor the appreciation of the patient-physician relationship which would entitle them to presume to speak for medicine or the public interest.

Socialized medicine will inevitably reduce standards of performance in diagnosis and treatment to a lower average level in the alleged effort to aid distressed areas. These areas should have relief, but it would be as reasonable to destroy part of a prosperous farmer's crop so as to lessen the discrepancy between him and his less fortunate or less industrious neighbor as to reduce standards of medical practice by measures which will not help but rather will ultimately accentuate the deficiency of medical care in depressed areas.

LABOR AND SOCIALIZED MEDICINE

The medical implications of socialized medicine, so clear to physicians who have stopped to think, are poorly understood by the majority of nonmedical people. Perhaps this is no more strange than the fact that relatively few people have attempted to think through the problems of permanent world peace such as come to the fore toward the close of each war. Currently over one hundred books and innumerable articles have been written about peace. In medicine remarkable progress has been made in methods of the cure of disease and in lessening the duration of individual illness. Life expectancy, especially in the industrial and lower income groups, increased from 34 years in 1879 to 64 years in 1942. These advances together with the increase in number of available hospitals from one thousand to seven thousand in thirty years now have made possible actuarially sound hospital insurance at a price which the man of limited means can afford. Even since the first hospitalization plans were inaugurated a lessening of need as expressed by duration of hospital stay has occurred. The average need of 5 hospital beds per thousand of population which prevailed in 1920 is now nearer 3.5 beds per thousand because of improvement in medical service. The utilization of this accomplishment awaits the education of the public and the formation of resultant favorable public opinion.

While it might appear that medicine has been slow to publicize its own progress, definite programs can be proposed with reasonable assurance of safety and soundness only when sound actuarial statistics are available.

It is not surprising that organized labor, which represents a substantial portion of our population, has had difficulty in understanding the medical problem as applied to itself. This attitude of labor is understandable on review of its successes and its disappointments. The development of the labor movement, now over a hundred years old, has for its object the improvement of standards of living of the artisan and laborer. Such improvement is an important part of the desirable social changes and advances that have come in the complex of national and world living. Improved standards of living have come under the inspiration and guidance of many wise and forceful leaders. This extension has been delayed in certain periods and localities by the assumption of leadership by self-seeking reckless demagogues, whose actions have raised serious question as to their loyalty alike to their cause and to their coun-

¹ Should We Adopt Government Health Insurance? University of Chicago Round Table, number 354, National Broadcasting Company, Dec. 31, 1944, p. 3.

try. At times leaders have been unable to control sections of their own membership, so that the announced policies and promises of responsible leaders have been betrayed, to the detriment of the just cause of labor. In its operating agreements with employers representing capital, there have been breaches of contract now by one, now by the other. But through it all labor has come to occupy a prominent and essential part of our national, social and economic life. Observers might well anticipate, however, that labor is no better informed on the relationships of medicine than are other sections of the American public, and such is the case.

In past years medicine has found difficulty in getting even a conference with responsible labor leaders, notwithstanding the unquestioned importance to labor of the medical questions requiring discussion. Approaches were often made through management, which no doubt at once initiated distrust by labor. Cogent questions of measures to prevent exposure of shop employees to contagious disease of their sick colleagues, and more recently the cooperation of labor in industrial preventive medicine, first urged by physicians with a view to the protection of labor, have required much explanation before labor could be convinced of the overall desirability to labor of the measures proposed. Too often also the quality of medical care afforded labor by management in the early days did not inspire trust in the good faith of employers.

More recently, conferences have been held with labor and management concerning problems of physical fitness for specific operations in industry. As soon as labor representatives were assured of the sincerity of medicine, their resistance to conferences decreased. This is most encouraging. The holding of future profitable conferences will result in more complete understanding. Medicine has no "ax to grind"; medicine knows no class in providing its art and skill to the care of the sick.

The attitude of labor to socialized medicine is thus explainable by lack of information and possibly also by the use of the word "social," which has too often been loosely interpreted as having the connotation of "something desirable that we haven't yet got." If in place of socialized medicine there was substituted "government controlled medicine" the whole picture would be less attractive.

Just as the present stature of labor has been built by years of effort and vision, and standards of living of its members, though often still unsatisfactory, infinitely improved over those of former years, so the present achievements of medicine have been attained through decades and centuries of patient work and study. Neither labor nor medicine will care to contemplate the destruction of cherished ideals and standards. The establishment of socialized medicine in this country would destroy standards of medical practice and quality of service to the public, of which labor constitutes a large part. One of the aims of labor is to increase the economic freedom of its members; will labor wish to compromise this freedom by agreeing to the imposition of governmental medical domination? Will its members wish to be regimented as to their medical care and to join the panel of a state paid doctor, whose initiative and sense of personal responsibility to his patient are blunted by years of routine and unprogressive service? Both medicine and labor will do well to remember the adage of Benjamin Franklin "They that give up essential liberty to obtain a little temporary safety deserve neither liberty nor safety."

Present proposals for socialized medicine will result in a lowered quality of medical care for the worker. More important to us all, including labor, this is but the first step of a far wider plan for the socialization of our government. As each step is taken, the similarity to what took place in National Socialist Germany becomes apparent. Under the guise of improvement of medical care of certain groups of people whose present provision is clearly inadequate, measures are proposed which will lower the general level of care, so that the average of all will become inadequate.

As reiterated by Herbert Morrison in his discussion of the problems of English labor, "It is often forgotten today, as it was during the English industrial revolution, that the combination of capital savings and investment, with labor, made possible rapid advances in standards of living of workers as well as owners. The misfortune lay in the lag between standards for the well-to-do and for the less prosperous." Today efforts must be centered on the improvement of care for those groups in which it is deficient rather than on the reduction of the standards of living, including medical care, already enjoyed by labor as a part of the commonwealth.

The establishment of a system which provides low grade medical care will have the same effect in reducing the amount of care of a better grade as has cheap money in driving sound money out of circulation in the monetary system. In commerce and in medicine, if standards of living are to be maintained, quality of output must also be maintained. Reduction of quality lowers standards of living.

Our medical as well as our social and governmental problems must be solved with reference to our traditional ideology and economics and not with reference to what has seemed desirable to other nations differently situated. Nevertheless it should be noted that sweeping governmental plans looking to the socialization of medicine in New Zealand were decisively repudiated by popular vote in recent months, as soon as the people became aware of their real implications.

One of the most serious effects of the taking over of the practice of medicine by government as provided under proposed legislation will be the loss of personal, local, county and state responsibility and the substitution of a central governmental bureau. Already innumerable Washington bureaus seem to have taken over even legislative functions in that they are said to write 90 per cent of the bills passed by Congress; then under broad permissive provisions they undertake the functions of the federal judiciary and prosecute citizens for violations of laws which they themselves originated. Federal subsidies, some of which are beneficial to the nation as a whole, are in other cases made the instrument by which the will of a bureau is imposed on states and local communities. This system forces the sale of states' rights to a federal bureau for the price of a government subsidy.

This system will accentuate rather than decrease existing social injustices and tend toward totalitarian government, which in Germany eventuated in the attempt to rule the world and is now engulfing her in disillusionment and misery.

For the successful conduct of any community, moderate central government is necessary to secure justice and fair balance between cooperating elements. But, as in old Rome, when for political purposes government becomes paternal and proposes increasingly to order the lives of citizens, individual moral fiber

weakens and the state eventually crumbles. The nation is like the child who does not grow strong when everything is done for him. The sense of personal responsibility is lost. Socialized medicine will inevitably remove the feeling of personal responsibility of the state physician for the welfare of his patient, and the quality of medical service to labor as well as to the rest of the people will deteriorate.

Especially important is the distinction between those responsibilities that can best be undertaken by the individual and those that are more efficiently performed as a community effort. Experience has shown that some functions of complex community life cannot be carried out successfully by the individual, such as the defense of police power of home against thieves and aggressors, the protection of the larger community against external aggression by military force and in medicine the establishment of sanitary safeguards within and beyond the community borders by health departments and the Public Health Service. Here there is involved the process of dealing with situations and populations *en masse*, with a view to prevention and not cure of disease, by scientific and practical measures the effective employment of which requires lifetime study and experience of specially trained men. When, however, illness overtakes the individual, his care, while based on experience in the treatment of his disease, becomes a problem which cannot be met by mass measures if the rights of the individual are to be respected. The most ardent advocate of socialized medicine, when he himself becomes ill, properly demands that he be treated as a man and not as one of the herd.

The success of medicine on full time in the army is urged by some as evidence of the success of regimentation in the practice of medicine. It is forgotten that the patients are a selected, originally healthy group of soldiers who also are themselves completely regimented. The average conditions of army practice, other than the use of the best technical methods of medicine, are entirely different from those met in civilian life.

The experienced doctors who entered military service on a purely voluntary basis did so because of a wish to do their part in the service of the nation in a grave emergency. Their accomplishments were possible because they had been schooled in an atmosphere of freedom. The success of their efforts is attributable to their training and not to the system of regimentation under which they now work. The wish of an overwhelming majority is to finish the job and return, free to practice and advance in knowledge as they did before.

Over the centuries a progressive centralization of effort and division of labor have increased the production of goods, raised standards of living and increased leisure, in which benefits labor in common with the rest of the public now participates. For medicine this has meant increased facilities for study and fruitful research, more effective care of patients, and a remarkable increase in life expectancy. This prolongation of life, by which thirty years have been added in the present epoch in the most productive period of life, contributes directly to the rising standards of living.

Until the war is completely won, our primary thought is prosecution of the war effort, which has been carried on so magnificently on battle and home fronts by all, including labor and medicine. The war has made necessary the institution of innumerable restraints, policies and sacrifices of freedom to which the Ameri-

can people, who, after all, are the government, will not willingly submit after the war. Much less is it fair or wise during a period when men's minds are temporarily and willingly attuned to a necessary measure of regulation, and when a large proportion of the physicians of the country are away in its service, to impose a new system of regimentation which will fail to accomplish the ends for which it is avowedly proposed and also will destroy the standards already reached.

In the epoch which we are about to enter, the advances and service to mankind of medicine will be conditioned by coincident far reaching economic and social changes. Wise and forward looking counsel will be needed to guide these changes by evolution rather than by revolution which leads to destruction.

Medicine has always been and is now motivated by the desire to be of service to the public. To achieve this ideal, medicine must be free.

122 South Michigan Avenue

PRIMARY COCCIDIOIDOMYCOSIS

A POSSIBLE PEDIATRIC PROBLEM

MAJOR RALPH H. KUNSTADTER

AND

MAJOR ROBERT C. PENDERGRASS

MEDICAL CORPS, ARMY OF THE UNITED STATES

It is only during the past few years that a clear concept of the pathogenesis and clinical features of coccidioidomycosis has become apparent. Until 1936 to 1938, when Gifford¹ and Dickson² described "valley fever" as the primary or initial coccidioidal infection, this disease was considered only as the disseminated granulomatous form with an ultimate poor prognosis. Now, however, we know that the initial infection in many ways resembles primary tuberculosis, that complete clinical recovery occurs in most instances and that the granulomatous form is a dissemination following a breakdown of the primary stage.

Most of the recent reports have been concerned with young adults in the military service, such as we are presenting today. However, one of the earliest reports of primary coccidioidomycosis dealt with this disease as it occurred in a group of children. In 1939 Faber, Smith and Dickson³ reported 24 cases in children under 15 years of age and mention that in a questionnaire 3 per cent of patients were under school age and 18 per cent were of school age. Furthermore, Gifford, Buss and Donds⁴ found 26 per cent of their 104 patients with "San Joaquin fever" to be younger than 20 years of age. Recently Hess⁵ of Chicago mentioned the occurrence of disseminated coccidioidomycosis in a man aged 29 who had resided in endemic areas repeatedly since the age of 11 years. He had gone during winter months to convalesce from sinusitis and bronchitis.

From the medical and roentgenologic services, Ashford General Hospital, West Virginia.

Read before the Section on Pediatrics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1. Gifford, M. A.: San Joaquin Fever, in Annual Report, Kern County Health Department for the Fiscal Year July 1, 1935 to June 30, 1936.

2. Dickson, E. C.: "Valley Fever" of the San Joaquin Valley and Fungus Coccidioides, California & West. Med. 47:151 (Sept.) 1937.

3. Faber, H. K.; Smith, C. E., and Dickson, E. C.: Acute Coccidioidomycosis with Erythema Nodosum in Children, J. Pediat. 15:161 (Aug.) 1939.

4. Gifford, M. A.; Buss, W. C., and Donds, R. J.: Data on Coccidioides Fungus Infection, Kern County, 1931-1936, in Annual Report, Kern County Department of Public Health for the Fiscal Year July 1, 1936 to June 30, 1937.

5. Hess, J. H.: Personal communication to the authors.

We are presenting this paper before the Section on Pediatrics because we believe that this disease has not received the attention it deserves from a pediatric standpoint. Pediatricians practicing in or near endemic areas of southern California, southern Arizona, southern Utah and western Texas unquestionably are more familiar with this disease than those of us practicing in other parts of the country. However, with modern rapid transportation facilities and increase in migration of populations the disease may be seen throughout the entire United States. Our problem is that of recognition of coccidioidomycosis, particularly in children returning from endemic areas in the Western states, where they have been sent to obtain the advantages of a dry climate in the treatment of respiratory diseases. It is significant that Faber and his group³ found that recent arrival in an endemic region was a predisposing factor. Evidently, acquired immunity occurs in a large proportion of individuals who have lived in endemic areas over a long period.

Sensitization to the fungus occurs following inhalation of contaminated dust, producing symptoms and tissue changes paralleling the primary infection in tuberculosis.³ Dickson⁶ suggests that the primary infection may be in the pulmonary parenchyma like the foci of Ghon.

We should be familiar with what might arbitrarily be considered three phases of the primary form: The acute stage, subacute or chronic active stage and the arrested or healed stage. Each is characterized clinically by significant features, the first by acute respiratory disease frequently associated with erythema nodosum and/or erythema multiforme and arthritic symptoms occurring usually two to three weeks after the initial infection. The subacute or chronic active stage may be considered as that period following the disappearance of acute manifestations in which, however, there is evidence of activity as manifested by changing pulmonary lesions in chest roentgenograms. This period may last from weeks to months. The last stage is designated as any time following disappearance of active infection when clinically silent lesions are demonstrated radiographically.

Our patients were mainly seen either in the second or in the third stage, as they were observed several weeks or months after they contracted the initial acute infection while in an endemic area. Briefly, a few words should be mentioned relative to the acute manifestations.

THE ACUTE STAGE

The acute stage is called by Smith⁷ the acute respiratory "influenza" or "pneumonic" form (rarely diagnosed in civilian practice). The incubation period varies from eight to twenty-one days. The onset may be abrupt or insidious. Thoracic pain, pleuritic in nature, frequently bilateral, is common, occurs early, is usually prolonged and is aggravated by cough. In Goldstein and McDonald's⁸ group of cases it occurred in 88 per cent, and an initial diagnosis of pleurisy was not infrequent. Cough is frequent, occurring in approximately 88 per cent of the cases, and is usually productive of yellowish brown sputum; at times particles of dust or sand may be observed. The cough may last a few days, two or three weeks, or, as in some of our cases, over

a period of several months. Hemoptysis may occur and is unrelated to the severity of the symptoms or the pathologic condition of the lungs. Chills and fever are frequent and usually last from two to four days. The temperature may range from slightly over normal to as high as 104 F. and may last for a few days or persist as a low grade fever for weeks. Many of the patients complained of sore throats at the onset, and pharyngitis and tonsillitis was a frequent initial diagnosis. Smith⁷ describes a fine macular generalized rash within the first few days of the onset resembling measles, scarlet fever or drug eruption. One of our patients recalled a measles type of rash on the third day of his acute symptoms. Physical examination may reveal signs suggestive of acute bronchitis, pneumonic consolidation or pleurisy. Within eight to fourteen days erythema nodosum and/or erythema multiforme occurs in 5 to 20 per cent of the cases. At this time arthritis pains occur rather commonly in approximately 30 per cent⁸ unaccompanied by joint swelling. The lumbar spine and lower extremities are most commonly involved. During this stage the blood frequently shows an eosinophilia. The total leukocyte count is not significant. The sedimentation rate is consistently elevated and may remain elevated after an apparent clinical recovery. The coccidioidin skin test is positive.

SUBACUTE OR CHRONIC ACTIVE STAGE

In the second group we are considering those patients who have active disease but either give no history of an acute attack or have recovered from the acute clinical manifestations mentioned heretofore. Some of our patients have been previously hospitalized elsewhere because of fatigue, loss of weight, chronic cough, chest pain and some because of low grade fever. In many a diagnosis of coccidioidomycosis was suspected on the basis of a history of residence in an endemic area. In others, initial diagnoses of bronchitis, pulmonary tuberculosis, bronchiectasis, atypical pneumonia, pleurisy and asthmas were considered.

Examination usually revealed evidence of weight loss and slight elevation of afternoon temperature. Examination of the thorax frequently revealed no abnormal findings, while, in others, evidence of pleural thickening, areas of impaired resonance and harsh breath sounds were found. Rales were conspicuously absent except in 1 patient who had a coexisting bronchiectasis and in another who had active pulmonary tuberculosis. Another patient had an asthmatic type of wheezing. A presumptive diagnosis was based on a history of residence in an endemic area, occasionally with previous acute upper respiratory episode, a positive coccidioidin skin test, elevated sedimentation rate and radiologic evidence of active pulmonary disease on serial x-ray examinations. In some patients the fungus was isolated from the sputum by culture and in 1 by guinea pig inoculation; in others it was not found. Repeated sputum specimens and gastric washings were examined for tubercle bacilli and none were found except in the 1 case with cavitation.

CHRONIC ARRESTED OR HEALED STAGE

In the third group we have considered a group of circumscribed nodular lesions as found on radiologic examination, with a history of residence in an endemic area, responding with a positive coccidioidin skin test. Most of these were found on routine examination and were asymptomatic as far as pulmonary disease was concerned. The sedimentation rate was normal. Cough usually was absent and there was no sputum. Gastric

6. Dickson, E. C.: Primary Coccidioidomycosis. *Am. Rev. Tuberc.* 38:722 (Dec.) 1938.

7. Smith, C. E.: Coccidioidomycosis. *M. Clin. North America* 27:791 (May) 1943.

8. Goldstein, D. M., and McDonald, J. B.: Primary Coccidioidomycosis. *J. A. M. A.* 124:557 (Feb. 26) 1944.

washings were negative for both fungi and tubercle bacilli.

Smith⁹ has demonstrated arrested pulmonary lesions, some calcified, mistaken for tuberculosis roentgenographically and at autopsy. We were further encouraged with respect to our interpretation of these lesions by the opportunity of seeing a solitary coccidioidomycosis nodule in the right lung and scattered miliary nodules in the left lung of a soldier on whom an autopsy was performed for accidental death, as shown in the accompanying illustration. Grossly, the lesions resembled tuberculosis and showed evidence of both healing and activity. The diagnosis was established by demonstration of the fungus in tissue sections.

DIAGNOSIS

In establishing a diagnosis of coccidioidomycosis, the following points in the history are of great significance:

1. Residence or visits in an endemic area.
2. An acute episode of respiratory disease, not infrequently followed in two or three weeks by erythema nodosum, erythema multiforme or both.



Large caseous lesion of coccidioidomycosis in the right lung. Accidental death; no pulmonary symptoms. Organism found in lesion.

During the primary infection there may be hilar adenopathy, patchy parenchymal infiltration or pleurisy with effusion. One or all three manifestations may occur. The primary radiologic findings may be consistent with a bronchopneumonia or an epituberculosis and may be difficult to differentiate from childhood tuberculosis. In adults a mottled apical infiltration may resemble an acute reinfection type tuberculosis or atypical pneumonia. More rapid resolution of the acute lesions is seen in coccidioidomycosis than in tuberculosis. Cavitation may occur within the first few weeks of the disease, and the majority of the cavities are thin walled.

After recovery from the acute stage, physical findings are usually absent. Chronic cough and chest pain are frequent complaints. There may be an evening temperature elevation. Hemoptysis is not common. Sputum is not abundant and has no characteristic appearance. Many late cases are asymptomatic, and residual lesions are found on routine radiographic examination

of the chest, which may show linear fibrotic markings, thickened pleura, atypical parenchymal infiltrations or nodular lesions resembling solitary tuberculous lesions, or metastases. Hilar adenopathy may or may not be present. Smith¹⁰ and Carter¹¹ have described nodular lesions in the primary and arrested stages.

Colburn¹² states that "permanent fibrotic residues are not conspicuous. Areas of exudation clear fairly rapidly (ten to twenty days) but infiltrates require thirty to ninety days and occasionally longer." We believe that prolonged radiographic observation may show the presence of nodular densities after all other radiographic evidence of the disease has cleared.

Sarcoidosis, the lymphomas and fungous infections, other than coccidioidomycosis, must be considered in a differential diagnosis (Carter¹¹ and Fawcitt¹³).

The following 3 cases illustrate the necessity of considering a fungous infection as an explanation for nodular pulmonary lesions, or cavities, as observed on roentgenograms:

CASE 1.—A routine chest examination in December 1943 showed multiple nodular lung lesions in a soldier hospitalized for a radial nerve injury. No primary malignant focus could be discovered, and investigation disclosed that in October 1942 he suffered an attack of "bronchopneumonia" while at a desert training station. Review of films made during this attack revealed soft, rounded infiltrations in both lungs, corresponding exactly to the sites of the residual lesions noted by us fourteen months later. He had a strongly positive coccidioidin skin test. These lesions were still present on the film made March 20, 1944, seventeen months after the initial infection.

CASE 2.—A soldier with a history of training in a desert area, whose chief complaints were cough and chest pain, and who on admission six months after initial exposure showed hilar adenopathy and nodular parenchymal infiltration, developed several nodular pulmonary lesions during a five month period of observation. The coccidioidin skin test was positive, and sputum cultures revealed *Coccidioides immitis*.

CASE 3.—A patient examined to determine the cause of chronic cough showed a thin walled cavity in the right upper lobe on a chest roentgenogram. He gave a history of being stationed in a desert area eleven months previously. The coccidioidin skin test was positive. Tubercle bacilli were recovered from the sputum, and *Coccidioides immitis* was found in another specimen. Inoculation of one specimen produced coccidioid lesions in the retroperitoneal lymphatics of a guinea pig, with demonstrable ascospores. Radiographically no distinction could be drawn between a tuberculous and a coccidioid cavity in this case.

A positive intradermal test with coccidioidin indicates an allergic reaction comparable to the positive tuberculin test, i. e. either present or past infection. Rapid change from an inactive to a positive reaction is an indication of activity. A positive test may persist for years. Positive diagnosis is established by isolation of *Coccidioides immitis* from the sputum, or gastric washings cultured on Sabouraud's medium and confirmed by guinea pig inoculation.

Smith⁷ states that precipitin and complement fixation tests have proved useful. However, up to the present time difficulty in obtaining the antigen has prevented widespread use of these tests. In mild initial infection these tests are negative, and the more severe the infec-

10. Smith, C. E.: Coccidioidomycosis, Parallelism of Coccidioid and Tuberculous Infections.

11. Carter, R. A.: The Roentgen Diagnosis of Fungus Infections of the Lung, with Special Reference to Coccidioidomycosis, *Radiology* 38: 649 (June) 1942.

12. Colburn, J. R.: Roentgenological Types of Pulmonary Lesions in Primary Coccidioidomycosis, *Am. J. Roentgenol.* 51: 1 (Jan.) 1944.

13. Fawcitt, R.: The Roentgenological Recognition of Certain Bacterial Mycoses Involving Occupational Risks, *Am. J. Roentgenol.* 30: 10 (Jan.) 1938.

9. Smith, C. E.: Parallelism of Coccidioid and Tuberculous Infections, *Radiology* 38: 644 (June) 1942.

tion the more likelihood of their being positive. Precipitins are usually present in primary infections but rarely demonstrable in the disseminated form. The complement fixation rises with the severity of the infection, and these tests therefore may be of value in following the course of an active infection.

PROGNOSIS

The prognosis is usually excellent, although convalescence may be prolonged over a period of weeks or months and residual lesions may remain indefinitely. Only time will tell as to whether or not residual nodules disappear entirely or undergo complete calcification. All but one of Goldstein's⁸ 85 patients recovered, and almost all were sent to duty within a period of several weeks to a few months. All but 2 of our patients, 1 with coexisting pulmonary tuberculosis and another with bronchiectasis, returned to duty of a limited nature. When dissemination occurs there is less than a 50 per cent chance of recovery. Treatment is purely symptomatic.

COMMENT AND SUMMARY

The radiographic manifestations of coccidioidomycosis are variable, but the initial pulmonary infection commonly resembles childhood tuberculosis of bronchopneumonia. One of the more common manifestations of the chronic stage of the disease is the appearance of single or multiple nodular lesions in the lung which may readily be confused with nodular tuberculous lesions or metastases from Careful study of these lesions a magnifying lens will usually reveal serration of the edges.

As Carter¹¹ has so aptly stated, "It is, perhaps, more important to acquire grounds for the suspicion of a fungous disease than to acquire skill in differentiation between them."

ABSTRACT OF DISCUSSION

MAJOR WILLIAM H. WOOD JR., M. C., A. U. S.: The cause of coccidioidomycosis is a fungus which grows in the desert as hyphae. These long filaments break up into sections, or chlamydospores. When the chlamydospore is inhaled by animals or man it changes into an endospore, which is the pathogenic form of the fungus. Certain rodents seem especially susceptible to Coccidioidomyces. The Army makes use of this fact by examining the lungs of rodents in desert regions prior to staging maneuvers in these areas. Our patients with coccidioidomycosis have been few. Most of them lived in the East or Midwest. They were sent to California, Arizona, New Mexico or Texas for training purposes. They are young men who have had x-ray examinations of their lungs routinely or because they had respiratory infections. They come to us with a tentative diagnosis of tuberculosis. To differentiate coccidioidomycosis from tuberculosis, the clinical story is important. Location and appearance of the x-ray shadow is also helpful. Typically that of tuberculosis is reticulopneumonic, while that due to coccidioidomycosis is in the middle or lower lung fields. Cavities, if present, due to this condition have thinner walls and are more cystlike than those due to tuberculosis. The coccidioidin skin test, comparable to the tuberculin, should be employed. The sputum and gastric washings should be examined for fungi. There is a precipitin test and a complement fixation test, said to be helpful, but we have not been able to do these tests in our laboratory. The former is said to be present early, and the latter present in high titer during the secondary or granulomatous, spreading form. Other conditions which must be considered in the differential diagnosis are lymphoma, sarcoma and metastatic or embolic foci in the lungs. In some cases the physician is unable to establish the diagnosis with certainty. We feel that all such patients should be treated as though they had tuberculosis.

HEMOLYTIC TRANSFUSION REACTIONS DUE TO RH INCOMPATIBILITY

MANIFESTATION OF SENSITIVITY TO THE RH
FACTOR MANY YEARS AFTER IMMUN-
IZATION BY PREGNANCY

LAWRENCE E. YOUNG, M.D.

AND

DONALD H. KARIHER, M.D.

ROCHESTER, N. Y.

Routine cross matching of donor's cells with recipient's serum for demonstration of acquired isoagglutinins is inadequate. Since the transfusion service of this institution was centralized in November 1943 and all reactions were subjected to complete investigation by the personnel of the blood bank, nearly 1,000 transfusions have been given without evidence of a single reaction due to intergroup incompatibility. However, during this period there have been observed in 3 female patients 5 hemolytic reactions, all of which were due to acquired sensitivity to the Rh factor. In each instance cross matching had been carried out by the test tube centrifuge method, first at room temperature and later at refrigerator and body temperatures, without detecting incompatibility. This inability to predict intragroup reactions is due to the fact that many times the acquired Rh antibody is not demonstrable in vitro tests.

The transfusion reactions which occurred in this hospital during the seventeen years prior to the organization of the blood bank cannot be tabulated with any degree of accuracy. However, so far as is known, the only previously observed intragroup hemolytic reaction was that described by Kariher and Spindler¹ in connection with a study of hemolytic disease of the newborn.² In view of our recent experience, the apparent scarcity of such reactions during the prebank period indicates that many were probably overlooked.

The cases presented in this report clearly illustrate the great length of time that may elapse between the last sensitization to the Rh factor and a subsequent transfusion reaction. Levine³ states that once an individual is sensitized by the Rh factor that sensitization is probably retained throughout life. In this report are presented cases of proved retention of sensitivity nearly eight and sixteen years respectively after the last immunization by pregnancy.

Transfusion reactions due to Rh incompatibility may be typical or they may be bizarre, and therefore minor reactions can easily go undetected. However, if the Rh negative patient who has this minor reaction is given another transfusion of Rh positive blood he may have a more violent reaction which could prove fatal. It is of the utmost importance therefore to investigate all reactions, minor or severe, so that the exact cause can be determined and a recurrence of the accident, perhaps in a more severe form, be prevented. The procedure now used in this hospital in investigating transfusion reactions is presented briefly. Since it is desirable that all Rh negative individuals be transfused with Rh nega-

From the Departments of Medicine and Pathology, The University of Rochester School of Medicine and Dentistry, Clinics of the Strong Memorial and Rochester General Hospitals.

1. Kariher, D. H., and Spindler, D. H.: Hemolytic Reaction Due to Rh Factor, *Am. J. M. S.* 1944.
2. The desirability of using the "newborn" rather than "erythroblastosis fetalis" has been discussed elsewhere (by Kariher and Spindler¹ and by Kariher, D. H.: Erythroblastosis Fetalis [Hemolytic Disease of the Newborn] Occurring in One of Twins, *J. A. M. A.* 122: 943 [July 31] 1943).
3. Levine, P.: Mechanism of the Isoimmunization by the Rh Factor of Red Blood Cells, *Arch. Path.* 37: 83 (Feb.) 1944.

tive blood, our bank has now been organized in such a manner that this ideal can be achieved. A workable plan for the prevention of those intragroup reactions due to Rh incompatibility is presented.

REPORT OF CASES

CASE 1.—*History*.—E. S.,⁴ a white woman aged 40, married, tertipara, quadrigravida, was admitted to the Strong Memorial Hospital on Nov. 14, 1943. Her blood pressure was 120/80. Her red blood cell count was 3,570,000, her hemoglobin 10.8 Gm. per hundred cubic centimeters.

A radical mastectomy was performed November 15. Immediately after the operation a transfusion of 500 cc. of citrated, 1 day old whole blood (group A, Rh positive) was given before she had reacted from the ether anesthesia. Fifteen minutes after

and she gained strength rapidly. Aside from a urinary infection due to *Escherichia coli* her course thereafter was uncomplicated.

As shown in the table, further inquiry revealed that in 1925 she had had a miscarriage. In 1926 her second pregnancy was complicated by preeclamptic toxemia. Because of elevation of blood pressure to 186/102, ankle edema, persistent headaches and albuminuria labor was induced at eight and one-half months, and a normal female child was delivered. Her preeclamptic symptoms then promptly subsided and her blood pressure was never again found to be elevated until November 1943, as already mentioned. In 1927 she gave birth to a second normal female child after an uncomplicated pregnancy. On Feb. 7, 1936, nine years after the last pregnancy, she gave birth to a third female child. This baby appeared normal at birth but on the second day pronounced jaundice developed; the child became

Chronological Order of Pregnancies, Operations and Transfusions in Cases Presented

Case	Pregnancies					Transfusions				
	No.	Date of Delivery	Duration	Status of Child	Blood Type of Child	No.	Date	Donor's Blood Type	Reaction Febrile Hemolytic	Years Since Last Sensitization
1 Patient, A ₁ M Rh— Husband, O MN Rh+	1	1925	3 mos.	Spontaneous abortion	?					
	2	1926	8½ mos.	Normal	A M Rh—					
	3	1927	Term	Normal	A M Rh+					
	4	1936	Term	Hemolytic disease	A MN Rh+					
		1943	Operation			1	11/15/43	A ₁ MN Rh+	+	7+
2 Patient, A ₁ MN Rh— Husband, A ₁ M Rh+	1	1921	Term	Normal; died in infancy	?					
	2	1922	Term	Stillborn; monstrosity	?					
	3	1924	Term	Normal	A ₂ MN Rh—					
	4	1925	Term	Hemolytic disease	?					
	5	1929	Term	Normal	A ₁ MN Rh—					
	6	1944	Operation	Normal	A ₁ MN Rh—	1	6/2/44	O N Rh+	+	15
3 Patient, A ₁ N Rh— Husband, A ₁ M Rh+	1	1925	Term	Normal	A ₁ MN Rh+					
	2	1929	7 mos.	Stillborn	?	1	8/ 1/25	A ₁ MN Rh+	+	?
	3	1930	Term	Normal	O MN Rh—	2	9/ 5/28	A Rh ?	—	—
	4	1931	Term	Normal	A ₁ MN Rh+	3	9/10/28	A ₁ N Rh+	+	?
	5	1933	Term	Normal	A ₁ MN Rh—	4	9/13/28	A Rh ?	—	—
	6	1934	Term	Normal	A ₁ MN Rh—	5	9/16/28	A ₁ N Rh—	—	—
	7	1935	5 mos.	Induced abortion	?	6	3/17/41	A ₁ M Rh+	+	?
						7	3/18/41	A ₁ M Rh+	—	?
						8	3/21/41	O MN Rh—	—	—
						9	3/22/41	O MN Rh—	—	—
	8	1941	3 mos.	Induced abortion	?	10	2/26/44	A ₂ MN Rh+	+	+
		1944	Operation			11	2/28/44	A ₁ M Rh+	+	+
						12	3/ 1/44	A ₁ N Rh+	+	+
						13	3/ 3/44	A ₁ MN Rh—	—	—
						14	3/ 4/44	A ₁ M Rh—	—	—
						15	3/ 6/44	A ₁ MN Rh—	—	—

the transfusion was completed she had a mild shaking chill, but at no time did her temperature rise above 100 F. Ten hours after the chill she voided dark amber urine, which unfortunately was not tested for hemoglobin. She had a moderate oliguria, and her postoperative course was further marked by nausea, frequent emesis and lassitude, but she did not become jaundiced.

Nine days after transfusion, when she was seen by a medical consultant, her hemoglobin was 11.2 Gm. per hundred cubic centimeters, blood nonprotein nitrogen 160 mg. per hundred cubic centimeters, creatinine 9.2 mg. per hundred cubic centimeters. Her blood pressure had risen to 160/90 but her fundi were negative and the cardiovascular findings were within normal limits. By the following day, when the possibility of a hemolytic transfusion reaction was first suggested, the blood specimens collected from donor and patient prior to transfusion had already been discarded. Nevertheless the investigations to be outlined presently were begun. During the next two weeks the patient's blood chemistry and blood pressure became normal

progressively paler, and the liver and spleen became palpable. On February 20 the red blood cell count had fallen to 1,810,000, the hemoglobin to 6.0 Gm. per hundred cubic centimeters and a single nucleated red blood cell was seen in a careful search of the blood smear. On that day she was given 50 cc. of blood from her father, and on the following day 75 cc. of blood. After each of these transfusions she became more deeply jaundiced but less pale. On February 23 the icterus index was 60, red blood cell count 3,190,000, hemoglobin 8.5 Gm. per hundred cubic centimeters. Thereafter the child steadily improved and has since been normal.

The only other item of importance in the patient's past history is the report of an intravenous pyelogram of March 19, 1941 showing pyelectasis of the right kidney and constriction of the ureteropelvic junction. It is possible that previous renal damage was partly responsible for the azotemia which developed after the transfusion reaction.

Blood Studies.—After the question of transfusion reaction was raised, it was learned that the blood of the patient and her family had been studied shortly before her operation in a laboratory separate from the blood bank. In the table are shown the

⁴ Dr. John J. Morton gave the authors the privilege of studying this case. Dr. John S. Lawrence first pointed out the probability of a hemolytic reaction by the patient.

blood groups of the S. family and of the donor who later provided a fresh sample of blood for grouping. No anti-Rh agglutinins could be demonstrated in the patient's serum against Rh positive cells from 3 individuals when tested before transfusion, but twenty-four days after she received the Rh positive blood the anti-Rh titer had reached a maximum of 1:32,000.⁵

On Nov. 26, 1943, eleven days after transfusion, the patient's red blood cells were completely agglutinated by anti-M serum,

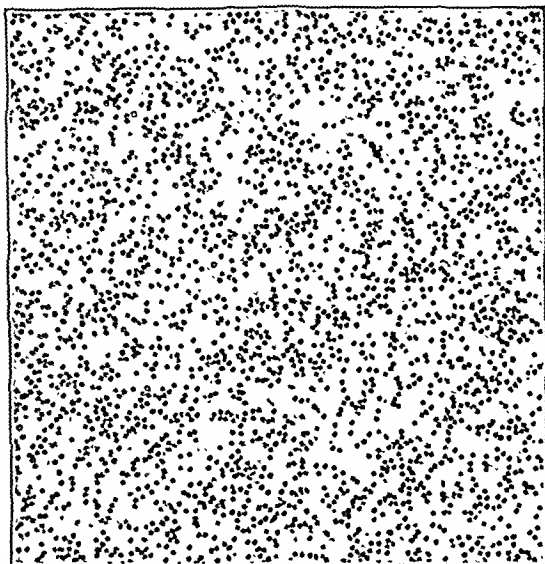


Fig. 1 (figures 1, 2, 3, 4 and 5 illustrate survival of transfused Rh negative cells, types M and MN, demonstrated by mixing anti-M serum with suspension of patient's cells (case 3, type N) after transfusion with Rh positive blood, but before transfusion with Rh negative blood; no agglutination because all cells are type N (patient's).

but no agglutination occurred with anti-Rh or anti-N serums. Since the donor's blood was Rh positive, type MN, this test indicated that all of the transfused cells had been destroyed.⁶ It is unfortunate that these studies were not carried out earlier, but even if a demonstrable portion of the donor's cells had survived to the tenth day this would have been only one-tenth the expected survival period for 1 day old citrated blood.⁷

CASE 2.—History.—E. P., a woman aged 43, quadripara, septigravida, was admitted to Rochester Municipal Hospital on May 31, 1944 for treatment of a relaxed pelvic floor with cystocele and rectocele. Her preoperative blood counts were red blood cells 4,000,000, hemoglobin 14.0 Gm. per hundred cubic centimeters, white blood cells 7,600. The urinary findings were normal. On June 2 a complete repair operation was carried out. In the course of the operation the patient bled profusely, so that supportive measures were indicated. Consequently, during and immediately after the operation the patient was given 700 cc. of isotonic solution of sodium chloride, 400 cc. of plasma and 500 cc. of group O blood to which 5 cc. of A and B specific substances had been added.⁸

There was no obvious immediate reaction (the patient was still under anesthesia) but in the evening of the day of operation her temperature had risen to 102 F. and the pulse rate was 182. Blood pressure was 90/65. The urinary output was only 50 cc. in the twenty-four hour period. By the following morning the temperature had risen to 103.4 F. and the patient was noticeably jaundiced. Her fluid intake this day was 2,800 cc. and her urinary output was 160 cc. By the third postoperative day (two days after operation) the icterus index was still 36 and

the nonprotein nitrogen had risen to 92 mg. per hundred cubic centimeters. It was not until the twelfth postoperative day that these chemical findings returned to normal. Catheterized specimens of urine were negative except for a 2 plus reaction for albumin. Hemoglobin on the fourth postoperative day was 11.2 Gm. and red blood cells numbered 3,800,000. Two days later the hemoglobin had further decreased to 9.8 Gm. The patient gradually improved and made an uneventful recovery.

The patient's obstetric history as summarized in the table is of great interest. Following the transfusion the Rh status of the patient was investigated along with that of the available members of her family. These results are also shown in the table. Anti-Rh agglutinins were demonstrable in a low titer in the patient's serum three days following transfusion, whereas none were found in blood drawn prior to the transfusion. Five days following transfusion the anti-Rh agglutinin titer had risen to 1:32. Three days following transfusion complete destruction of the donor's cells, type O N Rh +, was easily demonstrated by tests with B, anti-M and anti-Rh serums, since the patient's type was A₁ MN Rh —.

CASE 3.—D. S., a white married woman aged 34, quintipara, octigravida, was admitted to the Rochester Municipal Hospital on Feb. 24, 1944. Two days later she underwent a complete repair operation which involved considerable loss of blood. During her first five postoperative days she received three whole blood transfusions of 500 cc. each, but nevertheless her hemoglobin remained at 8 Gm. per hundred cubic centimeters. On March 2, the day following the third transfusion, she was jaundiced, her icterus index was found to be 52, indirect bilirubin 8.7 mg. per hundred cubic centimeters, direct bilirubin 1.4 mg. per hundred cubic centimeters and hemoglobin was demonstrated spectroscopically in her serum. She had had none of the usual symptoms of a transfusion reaction, but her temperature had risen to 101 F. after the third transfusion.

Blood Studies.—Investigation revealed that the patient was Rh negative and all three donors were Rh positive, but anti-Rh agglutinins could not be demonstrated at any temperature in the serum drawn before operation or in any serums drawn during the next two months. Differential agglutination tests with anti-M and anti-Rh serums showed that on the day following

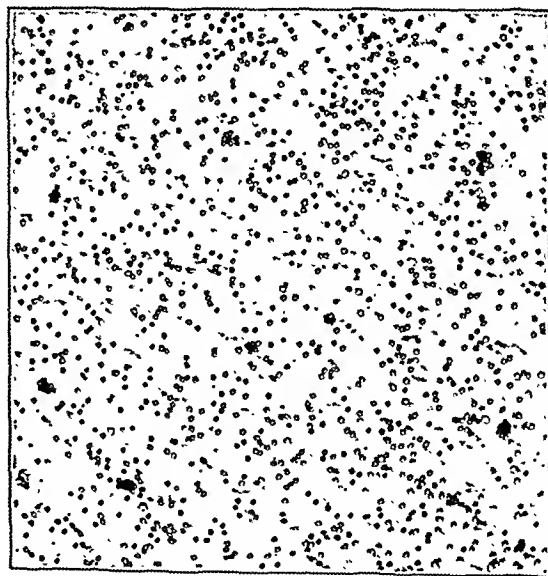


Fig. 2.—One day after first transfusion of Rh negative blood, type MN; an increasing degree of agglutination.

5. The results of the titrations of anti-Rh agglutinins were confirmed by Dr. Philip Levine. He agreed that this serum showed a definite prozone.

6. Wiener, A. S.: Hemolytic Transfusion Reactions: I. Diagnosis. With Special Reference to the Method of Differential Agglutination. *Am. J. Clin. Path.* 12: 189 (April) 1942.

7. Wiener, A. S., and Schaefer, G.: Limitations in the Use of Preserved Blood for Transfusion. *M. Clin. North America* 24: 705 (May) 1940.

8. Witelsky, E.; Klendshoj, N. C., and Swanson, P.: Preparation and Transfusion of Safe Universal Blood. *J. A. M. A.* 116: 2654 (June 14) 1941. The A and B specific substances were supplied by the Eli Lilly Company, Indianapolis.

the second transfusion Rh positive (M and MN) cells were still present in the patient's circulation. Two days later, however, these cells and all of the third donor's cells had been destroyed. During the next four days she received three 500 cc. transfusions of Rh negative blood, which produced a rise in her hemoglobin to 13 Gm. per hundred cubic centimeters. Since the patient belonged to type N and the 3 Rh negative donors to types M or MN, it was possible to show an increasing percentage of cells

agglutinable with anti-M serum after each of the last three transfusions (fig. 1). Moreover, these Rh negative cells containing the M factor were still demonstrable in the patient's blood ninety days after the last transfusion.

The patient's previous transfusions and obstetric history are recorded in the table. From 1928 to 1941 she had had eight

the patient's record gives no conclusive evidence of rapid destruction of the cells of these donors, it is noteworthy that she had chills and fever after three of the nine transfusions, and all 3 of these donors have been found to be Rh positive. On the other hand, the blood from the 3 individuals subsequently found to be Rh negative caused no reaction. Only once did she receive known Rh positive blood without recorded reaction. The Rh type of 2 of her previous donors has not been determined.

COMMENT

Clinical and Laboratory Diagnosis of Hemolytic Reactions.—It has been pointed out by Wiener and his associates⁹ that in the majority of cases chills and fever following transfusion are due to nonspecific agents. On the other hand, the donor's cells may be destroyed rapidly because of specific incompatibility without causing any alarming symptoms. The mild chill of patient 1 was largely overlooked because she was under anesthesia and because it was not followed by any rise in temperature. In addition, her oliguria and passage of dark amber urine were disregarded and it was not until her blood nonprotein nitrogen was found to be 160 mg.

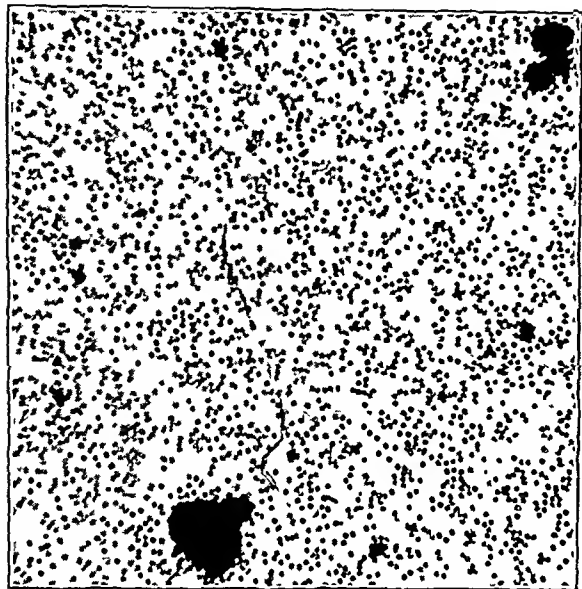


Fig. 3.—One day after second transfusion of Rh negative blood, type M; an increasing degree of agglutination

pregnancies. Three of her 5 living children were found to be Rh negative and 2 Rh positive; the last Rh positive child was born in 1931. In 1929, after a pregnancy of seven months, she gave birth to a stillborn child with a meningoencephalocle. In 1938 and 1941 she had self-induced abortions after three months of pregnancy. The Rh type of the 3 fetuses is, of course, unknown. However, it is significant that at no time did she

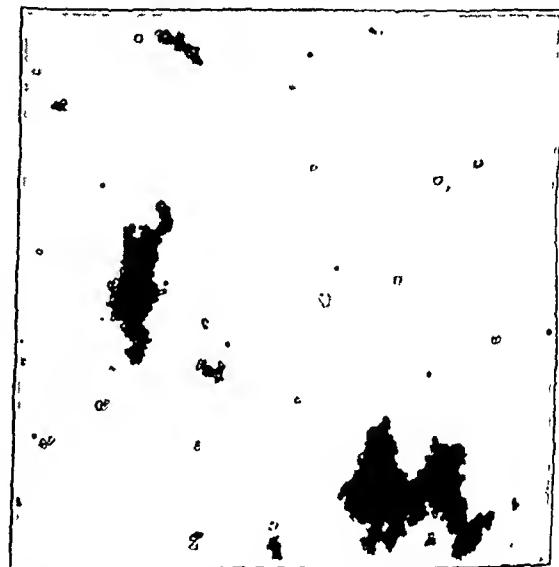


Fig. 5.—Control: cells of known type M from another person; practically complete agglutination.

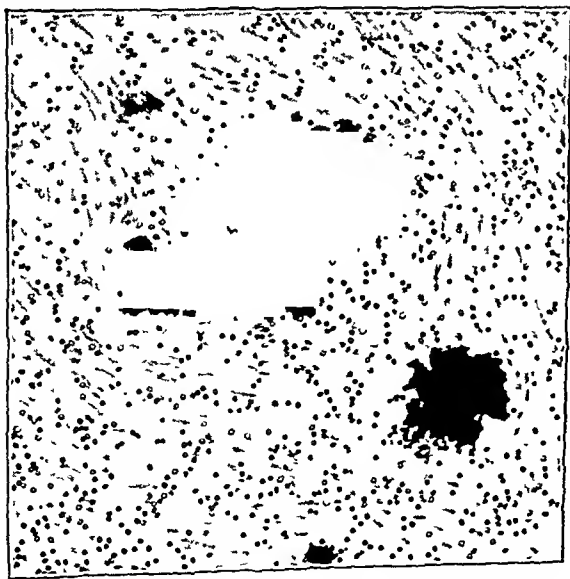


Fig. 4.—One day after third transfusion of Rh negative blood, type MN; an increasing degree of agglutination.

give birth to a child with manifestations of hemolytic disease of the newborn. Perhaps, if the last two pregnancies had been allowed to go to term, 1 or both of the infants might have suffered from the disease. Prior to the six transfusions described, she had had five transfusions after her abortion in 1938 and four more following the abortion in 1941. Although

per hundred cubic centimeters that a hemolytic transfusion reaction was suspected. In cases 2 and 3 the fever which followed transfusion was thought at first to be related to the operation, and the possibility of a hemolytic reaction was not considered until jaundice developed.

The importance of vigilance on the part of those in charge of transfusions and the necessity of systematic investigation of any untoward symptoms or signs cannot be overemphasized. The procedures to be followed in studying reactions have been set forth in detail by Wiener,¹⁰ Schiff and Boyd,¹¹ Mollison¹² and others. In the Strong Memorial Hospital Mollison's plan is now adhered to as strictly as possible. This involves an attempt to demonstrate (1) the occurrence of increased blood destruction and (2) its cause. The

9. Wiener, A. S.; Oremland, D. H.; Hyman, M. A., and Sanwald, A. A.: Transfusion Reactions: Experiences with More Than Three Thousand Blood Transfusions, *Am. J. Clin. Path.* **11**: 102 (Feb.) 1941.
10. Wiener, A. S.: Blood Groups and Transfusion, ed. 3, Springfield, Ill., Charles C. Thomas, Publisher, 1943.
11. Schiff, F., and Boyd, W. C.: Blood Grouping Technique, New York, Interscience Publishers, Inc., 1942.
12. Mollison, P. L.: The Investigation of Hemolytic Transfusion Reactions, *Brit. M. J.* **1**: 529 (May 1), 539 (May 8) 1943.

Wiener, Silverman and Aronson¹⁵ reported the case of an Rh negative woman who had hemolytic reactions after each of three transfusions of Rh positive blood given eleven years after the birth of the last of 5 Rh positive children. In none of these children was there any evidence of hemolytic disease of the newborn; nevertheless the mother had been sensitized and retained her sensitivity for eleven years. Mollison¹² observed a similar case of hemolytic reaction in a woman fourteen years after the last of four presumably normal pregnancies. Vogel, Rosenthal and Levine¹⁶ and Kouchy¹⁷ demonstrated the presence of anti-Rh agglutinins in the serums of women following their first transfusions, which were given nine years and twenty-three years respectively.

Limitations of In Vitro Tests for Rh Antibodies.—It has been found that anti-Rh agglutinins can be demonstrated in less than half of the Rh negative mothers of children with hemolytic disease of the newborn.³³ They usually disappear within six months to two years but have been found as late as six years after preg-

<u>EXAMINATION OF BLOOD IN ROMER BOTTLE</u>		<u>EXAMINATION OF PATIENT'S URINE AFTER REACTION</u>						
CULTURE		DATE	VOL.	COLOR	pH	UROBIL.	HGB.	MICRO
HEMOLYSIS								
LIPEMIA								

20. Wiener, A. S.: Hemolytic Reactions Following Transfusions of Blood of the Homologous Group, *Arch. Path.* 32:227 (Aug.) 1941. Wiener.²³

It is obvious that Rh incompatibility is a grave potential danger which must be faced by every one who has anything to do with the transfusion of whole blood or red cells. Although it has been sufficiently demonstrated that in the majority of instances this danger cannot be predicted by any sort of *in vitro* test thus far devised, Wiener's¹⁵ biologic test is no doubt a more sensitive indicator of Rh incompatibility. Kouchy¹⁷ states that Rh negative pregnant or puerperal women may be given Rh positive blood provided this test is negative. However, it seems entirely possible that in some cases of hemolytic reaction due to Rh incompatibility the hemolysis may be delayed beyond the test period of one or two hours and therefore may be missed. This might be expected particularly in patients whose last immunization by the Rh factor occurred many years prior to the transfusion. In such patients a number of hours or perhaps several days might be required for the anamnestic reaction²¹ to manifest itself. The findings in case 3 illustrate this possibility. As previously pointed out, on the day after the second transfusion some Rh positive M and MN cells were still present in the patient's blood, but two days later these cells and all of the third donor's cells had been destroyed. This suggests an acceleration of the hemolytic process after each successive transfusion.

Another scheme advocated by Kouchy is that of completing the transfusion program within a period of five or six days before antibodies can develop. He suggests that Rh negative individuals may thus be transfused with Rh positive blood. Although this practice may result in few severe reactions, it should be pointed out that even the first Rh positive cells given to an Rh negative person of either sex may survive for a relatively short period in the patient's circulation.²² The destruction of the donor's cells may not be sufficiently rapid to cause clinical symptoms and signs, but nevertheless the patient will be deprived of full benefit from the transfusion. A still more serious objection to Kouchy's proposal is that the injection of Rh positive blood into an Rh negative individual at any time may produce lifelong sensitivity to the Rh factor. This is particularly important in women who may thus lose their next child (or possibly their very first child) as the result of hemolytic disease, as suggested by Diamond.²³ Moreover, it should be emphasized again that Rh negative women, sensitized by pregnancy—even normal pregnancies many years before—may have severe hemolytic reactions following their first transfusion of Rh positive blood.

Plan for Prevention of Reactions.—In the light of our present knowledge it appears that the only safe plan for prevention of intragroup hemolytic reactions is that of giving only Rh negative blood to all Rh negative individuals. This practice is expensive and troublesome, but the recent experiences cited in this paper indicate that it is fully justified. The current policy of the Strong Memorial Hospital and Rochester Municipal Hospital is as follows:

1. Rh tests are performed free of charge on all donors, all transfused female patients, all obstetric and gynecologic

patients and all male patients who have received more than two transfusions.²⁴

2. When major surgery is contemplated for such patients, blood for grouping and Rh determination is sent to the bank before 8:45 a. m. of the day of operation. Except in emergencies, no female patient is sent to the operating room for major surgery unless her Rh type has been or is being determined.

3. Only Rh negative blood is given to the aforementioned Rh negative patients, and eventually this will be extended to include all males, regardless of their history of previous transfusions. Rh negative blood is also given to Rh positive infants with hemolytic disease of the newborn, as recently recommended.²⁵

4. If Rh negative blood is not available in the bank when needed, it is purchased from professional donors, most of whom are members of the institutional personnel. This means that most of the blood purchased by the bank, with funds provided by private patients, is Rh negative.

5. A special effort is made to keep group O, Rh negative blood in the bank at all times. In emergencies, if it is necessary to give this blood to persons of group AB, A or B, 5 cc. of a solution of A and B specific substances is added to neutralize the anti-A and anti-B agglutinins.

6. A transfusion requisition form, similar to that recommended by Butler, Danforth and Scudder²⁶ and by Barton²⁷ gives information regarding the obstetric history of the patient and any previous transfusion reactions. This serves to keep both the intern and the personnel of the bank on the alert for situations in which Rh incompatibility is apt to be found.

7. As an added measure of safety for Rh negative patients and in certain other cases, triplicate mixtures of donor's cells and recipient's serum are checked by the test tube-centrifuge technic²⁸ after standing at 37°C., room and refrigerator temperatures for one hour.

SUMMARY

1. The occurrence of hemolytic transfusion reactions due to Rh incompatibility in 3 women emphasizes the following points:

(a) Serious hemolytic reactions may follow transfusion without causing chills, fever or other dramatic symptoms or signs.

(b) Sensitivity to the Rh factor, once it is acquired, may persist for many years, probably for life.

(c) Rh incompatibility is often unpredictable by any sort of *in vitro* matching test.

2. Prevention of such reactions consists only in always giving Rh negative blood to Rh negative patients. This necessitates a complete reorganization of the blood bank so that Rh negative blood will always be available.

3. The study of reactions involves not only the rechecking of the groups and cross matchings but, in addition, the chemical examination of the blood and urine as well as the determination of the survival of the transfused red blood cells.

24. The anti Rh serums used in all determinations are of the 87 per cent variety. The various types of anti Rh serums have recently been discussed by Levine.²

25. Wiener, A. S., and Wexler, I. B.: Transfusion Therapy of Acute Hemolytic Anemia of the Newborn, *Am. J. Clin. Path.* 13: 393 (Aug) 1943. Mollison, P. L.: The Survival of Transfused Erythrocytes in Hemolytic Disease of the Newborn, *Arch. Dis. Childhood* 18: 161 (Dec) 1943. Levine, Burnham, Katzin and Vogel.² Kariher and Spindler.¹

26. Butler, B. C., Danforth, D. N., and Scudder, J.: The Rh Factor in Intragroup Blood Transfusion Reactions, *Surg., Gynec. & Obst.* 78: 610 (June) 1944.

27. Barton, F. E.: The Management of a Blood Bank at the Massachusetts Memorial Hospitals. The Problem of Rh Typing, *New England J. Med.* 230: 749 (June 22) 1944.

28. Levine, P., Burnham, L., Katzin, E. M., and Vogel, P.: The Role of Immunization in the Pathogenesis of Erythroblastosis Fetalis, *Am. J. Obst. & Gynec.* 42: 925 (Dec.) 1941.

21. Kariher and Spindler.¹ Levine.²
22. Dacie, J. V., and Mollison, P. L.: Survival of Normal Erythrocytes After Transfusion to Patients with Familial Hemolytic Anemia, *Lancet* 1: 550 (May 1) 1943. Wiener.²⁰
23. Diamond, L. K.: Hemolytic Transfusion Reactions Due to the Rh Factor: A Preventable Danger, *New England J. Med.* 227: 557 (Dec. 3) 1942.

FETAL ERYTHROBLASTOSIS

ISRAEL DAVIDSOHN, M.D.

CHICAGO

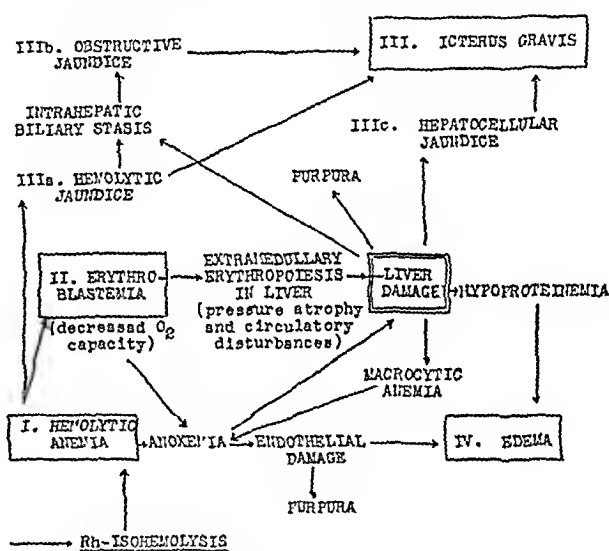
The diagnosis of fetal erythroblastosis does not, as a rule, present serious difficulties to those familiar with its clinical picture and laboratory findings. However, in some instances the diagnosis is not easy. The difficulties are due to several reasons. One is that the term actually includes three distinct clinical entities: fetal hydrops, icterus gravis and congenital anemia of the newborn. The fact that they are related genetically and etiologically and that children of the same mothers may alternately manifest any one of the three forms of the disease does not lessen the diagnostic difficulties in individual cases. Another source of difficulty is that there are mild forms of the disease which may be overlooked or misinterpreted. The third difficulty is that none of the manifestations of the disease are pathognomonic. Every one of them may be found in certain other diseases.

The diagnostic difficulties have been thrown into sharp focus because the diagnosis of fetal erythroblastosis has assumed increased practical importance since the recognition of the role played by the Rh factor¹ has led to advances in therapy which permit the saving of many children that would have died in the pre-Rh era.

My main purpose in this paper is to show how the study of the Rh factor can be helpful in the diagnosis of fetal erythroblastosis, especially in cases with diagnostic difficulties. The Rh factor was studied in all patients and in their parents and repeated hematologic studies were done whenever it was possible. Table 1 lists diagnostic findings in fetal erythroblastosis and in a group of diseases which may have to be differentiated from fetal erythroblastosis. The items listed in the uppermost column occur with varying frequency and intensity in fetal erythroblastosis. Any one of them or any combination of them may be present or absent. Not one of them is absolutely pathognomonic for the disease except anti-Rh agglutinins, the presence of which in the mother suggests strongly fetal erythroblastosis in the baby. However, that too is not an absolute rule. I have found several instances in which anti-Rh agglutinins were found in the mothers but the babies were born normal. One such case in which the agglutinins persisted from a previous pregnancy will be the subject of a special report.² The absence of anti-Rh agglutinins in the mother does not exclude the disease in the child, even if the Rh factor is responsible for the disease. It should also be kept in mind that a certain proportion (about 10 per cent) of cases of fetal erythroblastosis are not caused by isosensitization by the Rh factor. All other findings may be present in certain other diseases.

The fact that anti-Rh agglutinins in the mother are, as a rule, specific for fetal erythroblastosis in the child, that they are not found as responsible agents in any other disease, and that the combination Rh positive

father and baby and Rh negative mother is found in about 90 per cent of cases of the disease has added a new criterion for the diagnosis of the disease to the three known previously: the clinical, the hematologic and the pathologic. The new diagnostic aids are tests for the Rh factor in the father, mother and child, and for anti-Rh agglutinins in the mother. It would hardly seem necessary to state that the finding in a family of the previously mentioned Rh factor combination does not, by itself, prove that an illness, for instance jaundice, edema or anemia in a newborn child, is fetal erythroblastosis. Yet a tendency has become manifest recently to diagnose the disease on flimsy evidence, sometimes on no more evidence than that the mother is Rh negative. The finding of the characteristic distribution of the Rh factor may be used as evidence in favor of erythroblastosis, since it is found in 90 per cent of the disease. However, it should not be used as final proof; otherwise it may lead to inclusion of cases which have nothing to do with erythroblastosis, with resulting confusion. No student of the subject will deny that there are instances of hemolytic anemia of the newborn or of severe jaundice or of hydrops which are not



Pathogenesis of fetal erythroblastosis. Principle: Rh positive husband of Rh negative woman transmits the Rh factor to the fetus. Rh antigenic substances pass from Rh positive fetus through placenta and produce in mother Rh antibodies. The latter pass from mother to fetus through placenta, act in the fetus as hemolytic agents and start the sequence of interlocking pathologic changes as presented in this chart.

erythroblastosis fetalis. Septic infections and prenatal and neonatal bronchopneumonia may be associated with severe hemolytic anemia and occasionally with jaundice. It is sometimes extremely difficult to diagnose the underlying infection clinically. Only a necropsy may reveal it. There are instances in which even necropsy findings may not be unequivocal, for instance in premature infants and in stillbirth, especially in the presence of advanced maceration. The diagnosis of erythroblastosis may be difficult also in mild abortive cases. In all such cases a study of the Rh factor in the parents and child and of anti-Rh agglutinins in the mother may be of considerable help in arriving at a correct interpretation.

A few instances which illustrate the role of tests for the Rh factor in obscure cases have been reported previously.³

³ Davidsohn, I.: The Rh Factor, *M. Clin. North America* 28: 232-253 (Jan) 1944

From the Department of Pathology, Mount Sinai Hospital. Aided by a grant from the Committee on Scientific Research of the American Medical Association.

Read before the Section on Pathology and Physiology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

1. Levine, P.; Katzin, E. M., and Burnham, L.: Isosensitization in Pregnancy. Its Possible Bearing on the Etiology of Erythroblastosis Fetalis, *J. A. M. A.* 116: 825-827 (March 1) 1941. For further bibliographic references see Davidsohn.³

² Davidsohn, I., and Perlestein, M.: Relation of Anti Rh Agglutinins to Fetal Erythroblastosis, to be published

The occasional need of differentiating fetal erythroblastosis from congenital malformation of bile ducts is demonstrated in the following case:

CASE 11.—An infant aged 11 days, a patient of Dr. Philip Aries, was admitted with a story of progressive jaundice starting on the third day of life and of severe anemia. The infant was born at term, the delivery was normal and the weight at birth was 8 pounds 14 ounces (4,025 Gm.). There were two previous children, 11½ and 6 years old, both normal since birth.

A few days after birth it was noticed that the stools were acholic and contained no bile or urobilin. The urine contained

completely. Bile in the urine decreased gradually and eventually disappeared. The response of the anemia to blood transfusions is shown in table 2.

There is no doubt that this was a case of erythroblastosis. It is possible that the biliary obstruction was due to a plug of thick inspissated bile, which is known to have a thick consistency in hemolytic jaundice. Probing of biliary passages by the surgeon may have dislodged the plug and brought about drainage.

Temporary acholia of stools in newborn infants with severe jaundice lasting for several days and weeks is

TABLE 1.—Differential Diagnosis in Live Born Infants

	Fetal Erythro- blastosis	Congenital Syphilis	Antenatal Infection	Postnatal Infection	Hemorrhagic Disease of Newborn	Congenital Malforma- tion of Bile Ducts	Congenital Malforma- tion of Heart	Icterus Neonatorum
Familial incidence.....	++	++	—	—	—	—	—	—
Splenomegaly.....	++	++	+	—	—	++	+	—
Hepatomegaly.....	++	++	—	—	—	++	+	—
Anemia.....	++	++	++	—	—	—	—	—
Leukocytosis.....	++	++	++	+	±	—	—	—
Leukemoid blood picture.....	++	++	++	+	—	—	—	—
Erythroblastemia *.....	++	++	+	—	—	—	+	—
Icterus gravis †.....	++	++	++	—	—	++	—	—
High icterus index.....	++	++	+	—	—	++	—	—
Indirect Van den Bergh reaction.....	++	++	+	—	—	++	—	+
Biphasic Van den Bergh reaction.....	++	++	+	—	—	++	—	+
Bile in urine.....	++	++	+	—	—	++	—	—
Urobilin in urine.....	++	++	++	++	++	—	++	++
Purpura.....	++	++	++	—	++	++	—	—
Edema, general.....	±	±	—	—	—	—	—	—
Edema, local.....	+	+	—	—	—	—	—	—
Enlarged placenta ‡.....	+	++	—	—	—	—	—	—
Extramedullary hematopoiesis (at term).....	++	++	+	—	—	—	+	—
Hepatic biliary stasis.....	++	++	+	—	—	+	—	—
Hepatic damage.....	++	++	+	—	—	+	—	—
Hemosiderosis.....	++	++	+	—	—	—	—	—
Positive tests for syphilis.....	—	++	—	—	—	—	—	—
Father Rh+, mother Rh—, baby Rh+.....	++ In 90%	—	—	—	—	—	—	—
Anti-Rh agglutinins in mother's blood.....	++	—	—	—	—	—	—	—

* Erythroblastemia is used to indicate presence of immature nucleated red blood cells in circulation in excess of 1,000 per cubic millimeter.

† Icterus gravis is used to mean severe jaundice present at birth or within 48 hours after birth and lasting beyond the first week of life.

‡ Average weight of normal placenta is about one seventh of body weight.

++ indicates frequent occurrence; +, occasional occurrence; ±, uncommon occurrence; — indicates absence as a rule.

TABLE 2.—Observations in Case 11

Date	Red Blood Cells	Hemoglobin, Gm.	Color Index	White Blood Cells	Myelo- cytes	Segmented Neutrophilic Leukocytes	Lympho- cytes	Mono- cytes	Normo- blasts
10/22 (11th day of life).....	1,500,000	6.6	1.3	30,500	7	44	42	7	5,490
10/22 Blood transfusion, 200 cc. father's blood, A Rh— positive									
10/24.....	7,200,000	22	0.9	6,800	3	57	36	4	340
10/26 Blood transfusion, 150 cc. father's blood									
10/27.....	4,800,000	18	1.0	13,700	..	56	40	4	822
10/28.....	4,700,000	17	1.0	22,500					

bile but no urobilin. The icterus index in the blood serum was 150 and there was a prompt biphasic Van den Bergh reaction. The blood findings are retorded in table 2. Other laboratory findings were reticulocytes 9.4 per cent, platelets 188,000, coagulation time four minutes, bleeding time three minutes.

The acholic stools, the absence of urobilin in the feces and urine and the presence of bile in the urine prompted the diagnosis of obstructive jaundice probably due to congenital atresia of the bile ducts.

The anemia, erythroblastemia and jaundice suggested the possibility of fetal erythroblastosis. The mother was found to be Rh negative and her serum contained anti-Rh agglutinins. The baby, the father and the 2 older children were Rh positive.

An exploratory operation was decided on. The bile ducts were found patent. Within a few days following the exploratory operation bile appeared in the stool and urobilin in the urine; the jaundice began to decrease and soon disappeared

known to occur and has been quoted in the literature as leading to the erroneous diagnosis of congenital obliteration of bile ducts. Three views have been advanced as explanations: As a result of excessive hemolysis the bile becomes too viscous to pass freely along the bile channels, the bile coagulates and forms bile thrombi and, thirdly, damaged liver cells overtaxed by excessive excretory work fail to function.

The case to be reported now illustrates a diagnostic problem of similar nature as in the preceding but where a study of the Rh factor did not help:

CASE 13.—A girl aged 4 days, a patient of Dr. B. M. Gaul, was admitted with a history of jaundice since birth, two blood counts showing 2,800,000 and 3,000,000 red cells and 55 and 60 per cent hemoglobin. The mother had one previous miscarriage. The child was A Rh positive and was given 165 cc. of A Rh negative blood, following which her red count was

up to 5,000,000, the hemoglobin to 23 Gm. The color index was 1.3, white blood cell count 22,000, stab cells 2 per cent, segmented leukocytes 78, eosinophils 2, basophils 1; nucleated red blood cells were present: 230 per cubic millimeter on the seventh day and 600 on the twelfth, none later. The red count remained normal without further transfusions, hemoglobin decreased gradually to 18 Gm., the white blood cell count to 14,000. The differential count showed a gradual decrease of segmented granulocytes: 61, 49, 46, 32 and eventually 29 per cent at the age of 20 days, with a corresponding rise in percentage of lymphocytes, thus assuming the normal pattern. A few days after birth it was noticed that the stools became acholic and showed no bile and no urobilin until the twenty-seventh

normal. At the time of writing, the child is 6 months old and perfectly normal.

The severe jaundice and the anemia at birth favor the diagnosis of erythroblastosis of the type in which the Rh factor is not involved.

One of the important consequences of the discovery of the Rh factor has been its practical application to the treatment of fetal erythroblastosis. There seems little doubt that transfusion of Rh negative blood administered early and continued according to clinical indications constitutes an important improvement in the treatment of the disease. In the following case reports

TABLE 3.—Observations in Case 3b

Day	Transfusion	Red Blood Cells	Hemoglobin, Gm.	Color Index	Normoblasts in Cu. Mm.	White Blood Cells	Myelocytes, %	Metamyelocytes, %	Stab Cells, %	Segmented Neutrophils, %	Eosinophils, %	Basophils, %	Lymphocytes, %	Monoocytes, %
Birth	.....	1,603,000	7.5	1.4	376,750	171,000	4	4	5	33	3	1	42	8
3 hrs.	65 cc. ORh—													
5½ hrs.	.....	3,600,000	11.6	0.9	122,700	10,000	5	..	5	41	1	1	42	2
13 hrs.	67 cc. ORh—													
22 hrs.	100 cc. ORh—													
2	70 cc. ORh—	5,000,000	18.0	1.1	25,830	30,000	3	1	7	65	1	..	10	4
3	.....	4,700,000	15.6	1.1	15,932	12,000	1	1	1	61	3	..	25	8
4	.....	4,530,000	15.4	1.0	9,280	13,000	1	5	3	50	3	1	30	7
14	.....	3,740,000	10.6	0.8	.....	8,000	..	3	3	57	..	..	30	5
21	.....	3,500,000	10.4	0.9	123	12,000	..	3	1	44	1	..	47	4
25	.....	2,150,000	8.7	1.2	.....	15,000	..	3	1	42	2	..	44	5
26	100 cc. ORh—													
29	75 cc. BRh+	2,763,000	7.4	0.8										
30	20 cc. BRh+													
31	20 cc. BRh+													
32	20 cc. BRh+	2,670,000	8.6	1.0	.....	15,000	..	..	4	42	4	1-	37	12
40	.....	2,900,000	9.3	0.9	.....	12,000	1	..	2	30	1	..	57	9
53	.....	3,340,000	11.6	1.0	.....	15,000	1	2	3	38	2	..	43	6
60	.....	3,810,000	11.6	0.9	.....	9,000	..	2	7	32	2	1	54	1

At birth: icterus index 30; Van den Bergh biphasic; indirect Van den Bergh 3.7 mg.; total serum protein 4.4 Gm.; albumin 1.7 Gm.; globulin 2.7 Gm.; albumin-globulin ratio 1:1.6 Fourth day: icterus index 167; serum protein 5.6 Gm.

TABLE 4.—Observations in Case 15

Day	Transfusions	Red Blood Cells	Hemoglobin, Gm.	Color Index	Normoblasts per Cu. Min.	White Blood Cells	Myelocytes, %	Meta-myelocytes, %	Stab Cells, %	Segmented Neutrophils, %	Eosinophils, %	Basophils, %	Lymphocytes, %	Monoocytes, %
4	.....	1,900,000	9.0	1.4	1,263	15,200	2	5	6	42	3	1	30	3
5	75 cc. A Rh—													
6	.....	3,200,000	12.0	1.1	372	12,400	3	9	3	40	4	..	25	4
8	.....	3,000,000	9.6	0.9	...	15,900	3	..	3	51	3	..	35	3
9	100 cc. A Rh—													
10	100 cc. A Rh—	3,100,000	12.6	1.0	...	13,400	2	1	2	55	3	..	33	4
14	.....	3,300,000	13.0	1.1	...	18,000	1	2	1	40	3	..	37	5
18	.....	3,300,000	9.0	0.8	...	10,400	1	..	3	36	2	..	50	8

Urine: Fourth day, bile +; 5th day, bile +, urobilin and urobilinogen + in dilution 1:10; 14th day, platelets 228,000.

day of life, when doubtful traces began to appear. The urine showed bile pigment. Urobilin was present during the first two weeks of life, then absent, to reappear again in the fourth week. The icterus index on the twelfth day of life was 160, with a biphasic Van den Bergh reaction. It was 110 on the seventeenth day, 43 on the twenty-seventh, the Van den Bergh remaining biphasic. On the day of discharge at the age of 38 days the icterus index was 21.

The clinical diagnosis was fetal erythroblastosis or congenital anomaly of the bile ducts. The father was A Rh positive, the baby A Rh positive, the mother O Rh positive, without anti-Rh or any other irregular agglutinins. In spite of this negative serologic finding the diagnosis of fetal erythroblastosis was maintained and the child not operated on. It improved gradually, the jaundice disappeared and the stools became

the beneficial effect of transfusions is emphasized by the circumstance that the anemia in the surviving child was much more severe than in the one that died.

CASE 3a (patient of Dr. M. L. Dale).—The first child was normal and 2 years old when the second child was born. During pregnancy a transient anemia (red blood cell count 2,900,000 and hemoglobin of 65 per cent) were found on one occasion. The delivery was normal. The child became jaundiced on the second day of life. One hundred cc. of blood of group O, the Rh factor of which was not determined, was given but only a short while before death. Blood findings on the third day of life are recorded in table 7. Blood platelets were 190,000 on two occasions. Fragility of the red blood cells was normal. The child died on the fourth day of life. The necropsy findings are given in table 8.

CASE 3b.—The third child of the same family was born twenty-one months after the second. Pregnancy and delivery were normal. Birth weight was 8 pounds 4 ounces (3,742 Gm.). In view of the previous history of erythroblastosis, an Rh negative donor was available at birth (the hematologic data are given in table 3). The baby was B Rh positive, the father O Rh positive, the mother B Rh negative. The mother was examined repeatedly during pregnancy but did not show anti-Rh agglutinins, and none were found on repeated examinations after the birth of the child. Jaundice became manifest ten hours after birth but was probably already present at birth because the placenta was yellow. There was general edema involving the face, arms, abdomen, scrotum and legs. In addition to blood transfusions, treatment included 5 per cent glucose intravenously, calcium gluconate and vitamin K. The child was kept in an

liver was not palpable. The father was A Rh positive, the mother A Rh positive, with severe anemia and excellent response to blood transfusions (table 4).

That fetal erythroblastosis may occur without anemia and erythroblastemia is demonstrated in case 7 (patient of Dr. B. E. Sayre).

The first child was O Rh positive, 18 months old and was normal. In the present, the second, child jaundice was noted at the end of the first day. Pregnancy and delivery were normal. The father was O Rh positive, the mother O Rh negative, with anti-Rh agglutinins, the baby O Rh positive. The child was taken off the breast at the end of the first day. The liver and spleen were palpably enlarged. The temperature was 104 F. The child appeared lethargic, the face edematous.

TABLE 5.—Observations in Case 7

Day	Transfusion	Red Blood Cells	Hemoglobin, Gm.	Color Index	Normoblasts in Cu. Mm.	White Blood Cells	Meta-myelocytes, %	Stab Cells, %	Segmented Neutrophils Leukocytes, %	Eosinophils, %	Basophils, %	Lymphocytes, %	Monocytes, %
3	.....	4,100,000	16.0	1.1	313	31,300	..	4	72	1	..	15	8
4	100 cc. ORh—, mother's washed red cells in saline	3,800,000	12.4	1.0	582	29,100	1	3	59	2	..	23	12
5	100 cc. ORh—, mother's washed red cells	4,900,000	9.4	0.7	...	27,500	..	..	60	1	..	24	15
6	100 cc. ORh—	5,000,000	12.6	1.0	...	.....	..	..	77	4	..	12	7
7	60 cc. ORh—	5,300,000	18.2	1.0	...	33,400	..	..	80	2	..	8	10
8	.....	6,100,000	19.7	1.0	...	16,400	..	3	52	6	..	27	12
11	.....	5,000,000	15.0	0.9	...	16,000	2	5	49	3	..	33	5
17	.....	5,000,000	17.0	...	...	22,000	..	..	16	10	1	63	8
101	.....	6,000,000	16.2	9.0	...	21,000	..	..	40	..	1	48	6
6 mo.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

TABLE 6.—Observations in Cases 8, 9 and 10

Day	Transfusions	Red Blood Cells	Hemoglobin, Gm.	Color Index	Normoblasts per Cu. Mm.	White Blood Cells	Myelocytes, %	Meta-myelocytes, %	Stab Cells, %	Segmented Neutrophils Leukocytes, %	Eosinophils, %	Basophils, %	Lymphocytes, %	Monocytes, %
4	.....	2,700,000	6.6	0.8	705	17,760	8	6	34	40	..	..	2	..
Case No. 9 (Twin No. 1)														
2	.....	3,600,000	12.8	1.0	856	21,400	..	..	2	69	1	1	19	8
3	65 cc. O Rh—	3,400,000	11.4	1.0	264	4,400	..	..	..	40	..	..	53	1
4	50 cc. O Rh—	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Case No. 10 (Twin No. 2)														
2	.....	4,200,000	13.0	1.0	2,600	13,600	..	..	..	59	..	..	21	7
3	.....	3,700,000	14.4	1.1	206	10,300	..	..	..	59	..	..	61	6
5	65 cc. O Rh— 50 cc. O Rh—	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

oxygen tent until nucleated red blood cells disappeared from the blood. The weight on discharge was 11 pounds 2 ounces (5,046 Gm.). The laboratory data are given in table 3. The low total protein and the reversal of the albumin-globulin ratio are of interest.

The anemia was much more severe than that of the child that died. In addition there was general edema, which usually makes for a bad prognosis. The child was given 300 cc. of Rh negative blood during the first forty-eight hours, 230 cc. of it during the first twenty-two hours. Rh positive blood was not given until the twenty-ninth day of life. The child which died received probably Rh positive blood and only a short time before death.

The following is another instance of prompt response to transfusions of Rh negative blood:

CASE 15 (patient of Dr. Philip Aries).—The first child, aged 3½ years, was normal. The second child became jaundiced soon after birth. The spleen was slightly palpable; the

There was no pronounced anemia at any time. It is possible that anemia was averted by the transfusions of Rh negative blood. The jaundice decreased gradually. The fever subsided at the end of a week. Vaginal bleeding was noted on the fifth day, lasting two days. The patient was discharged after nineteen days, with the jaundice almost gone but irritability noted. The laboratory data and transfusion record are given in table 5. The child was readmitted at the age of 6 months. She had not been normal since she left the hospital. She was unable to hold her head erect. There were opisthotonos, a fever of 106 F., twitching, then coma. Lumbar puncture showed normal spinal fluid. Death occurred twenty-four hours after admission, from bronchopneumonia. The necropsy findings are given in table 8. At necropsy the liver showed no gross or microscopic abnormalities. The spleen, which was not enlarged, showed hemosiderosis. The absence of microscopic histologic changes in the liver is interesting. It is possible that at birth the histologic structure of the liver was similar to that seen in the other cases of the disease, in all of whom characteristic

changes were found as recorded in table 8. Purpura was the cause of death in 3 children of the same family, 2 of them twins.

CASE 8 (patient of Dr. A. H. Levine).—The first pregnancy terminated in abortion in the third month. The second pregnancy and delivery of a boy were normal. Jaundice was noted on the third day, followed by listlessness, twitches and rapid decline and death on the fourth day. The platelet count was 180,000, the coagulation time four minutes, the bleeding time two minutes. Other hematologic data are given in table 6 and the necropsy findings in table 8.

CASES 9 and 10.—Twins were born to the mother of patient 8 about fourteen months later, after a normal pregnancy and uneventful delivery. Jaundice was noted soon after delivery. There was no response to blood transfusions. The father was

of Rh positive, but the latter was given only to babies 11 days old or older. The surviving babies received together 1,810 cc. of blood. The beneficial effect of transfusions and especially of Rh negative blood when administered early is evident.

Necropsies were done on 8 babies with erythroblastosis (table 8). Two had congenital hydrops, 1 a premature stillborn weighing 970 Gm., the other stillborn at term, weighing 2,800 Gm. They were the only 2 in the series without jaundice, although the larger showed biliary stasis in the liver. Jaundice may have been obscured by edema. Three were 3 days old, 2 were 4 days old and 1 was 6 months old at death. There was a history of familial incidence in 5 of them. Two

TABLE 7.—First Blood Counts in Eleven Infants with Fetal Erythroblastosis

No.	Age	Red Blood Cells	Hemo-globin, Km.	Color Index	White Blood Cells	Normo-blasts per Cu. Mm.	Myelo-cytes, %	Meta-myelo-cytes, %	Segmented Neutrophils				Lym-pho-cytes, %	Mono-cytes, %	Termination	Cause of Death	Transfusion	
									Stab	Leuko-cytes, %	Eosino- phils, %	Baso- phils, %					Rh+ Cc.	Rh- Cc.
3A	3 days	2,800,000	10.4	1.1	7,200	300	..	..	12	50	..	..	17	10	Died 4 days	Br.Pn.	110	...
3B	Birth	1,000,000	7.5	1.4	171,200	370,750	4	4	5	33	3	1	42	8	Survived	.....	133	400
6	3 mo.	1,100,000	4.8	1.3	21,000	3,253	2	..	..	28	4	..	64	2	Survived	.....	225	...
7	3 days	4,100,000	16.0	1.1	31,300	312	..	..	4	72	1	..	15	8	Died 6 mo.	Br.Pn.	...	360
8	4 days	2,700,000	6.6	0.8	17,700	708	8	6	34	40	..	..	2	..	Died 4 days	Purpura	20	...
9	2 days	3,600,000	12.8	1.0	21,400	836	..	..	2	60	1	1	19	8	Died 3 days	Purpura	...	115
10	2 days	4,300,000	15.0	1.0	13,000	2,600	..	..	..	39	..	..	34	7	Died 3 days	Purpura	...	115
11	11 days	1,500,000	6.6	1.3	30,500	5,490	4	3	6	35	2	1	42	7	Survived	.....	350	...
12	5 days	2,800,000	9.0	1.0	22,000	220	..	..	2	78	2	1	10	7	Survived	.....	...	165
14	1 day	4,700,000	18.0	1.1	37,000	1,110	1	..	7	51	2	..	35	4	Died 3 days	Icterus gravis	...	...
15	4 days	1,900,000	9.0	1.4	15,200	1,368	2	5	6	42	3	1	39	3	Survived	.....	...	275

TABLE 8.—Summary of Necropsy Findings

No.	Age	Familial Incidence	Edema	Icterus Gravis	Liver		Spleen		Placenta	
					Hepato-megaly	Microscope	Spleno-megaly	Microscope	Enlarged	Microscope
1	Premature stillbirth (870 Gm.)	+	++ (hydrops)	—	—	+	—	+	1:1.3 †	+
4	Stillbirth at term (2,800 Gm.)	+	++ (hydrops)	—	—	+	+	+	1:1.7	+
3A	4 days	—	+	+	—	+	+	+	..	..
7	6 months	—	—	+	—	—	—	+	..	..
8	4 days	+	—	+	—	+	—	+	..	..
9	3 days	+	+	+	—	+	+	+	1:3.7	—
10	3 days	+	Local	+	+	+	+	+	1:3.7	—
14	3 days	—	Local	+	—	+	+	+	..	..

* + indicates findings generally considered as characteristic for fetal erythroblastosis, hemopoiesis, biliary stasis and hemosiderosis.
† Ratio of weight of placenta to body normally about 1:7.

O Rh positive, the mother O Rh negative with anti-Rh agglutinins, baby 1 (a girl) O Rh positive, baby 2 (a boy) O Rh positive. The hematologic data are given in table 6, the necropsy findings in table 8.

An attempt was made to correlate the anemia in the first blood count and the transfusions with the outcome (table 7). The red counts in millions in those that survived were 1.1, 1.5, 1.6, 1.9 and 2.8 and in those that died 2.7, 2.8, 3.6, 4.1, 4.3 and 4.7. The apparent relation between the severity of the anemia and the outcome may be purely accidental in the small series. The effect of transfusions is evident from the following figures: The 5 infants that died received altogether 110 cc. of Rh positive blood, 230 cc. of Rh negative blood and 20 cc. of probably Rh positive blood, together 360 cc. of blood. The 6 children that survived (among them is included child 7, which lived six months) received 1,200 cc. of Rh negative blood and 610 cc.

were the second children in the families, the first having been normal. One was the first live born child, preceded by an abortion. In addition to the 2 previously mentioned with severe general hydrops, 3 had moderate local edema and 3 had no edema. Six had severe jaundice of icterus gravis type. Only 1 had an enlarged liver, 150 Gm., with a body weight of 2,640 Gm. The normal weight would be about 106 Gm. In some of the others clinical records referred to palpably enlarged liver. In case 7, necropsy at the age of 6 months showed a liver actually smaller than normal, 136 Gm. as compared with 200 according to body weight of 6,000 Gm. All except case 7 showed microscopic changes (hemopoiesis, hemosiderosis and biliary stasis) in the liver. The child listed as case 7 died at the age of 6 months. That circumstance may be responsible for absence of changes in the liver. Five had spleno-megaly, all 8 showed microscopic changes in the spleen

(hematopoiesis and hemosiderosis), 6 showed focal hemopoiesis in other organs, including the kidneys and adrenals. There was nuclear jaundice in the brain in 4. The placentas were examined in only 4, and all were enlarged. Two with considerable enlargement (relation of weights of placenta to body was 1:1.3 and 1:1.7 instead of the normal average of 1:7) showed characteristic microscopic changes (fibrosis, edema, hemopoiesis). The other 2 with moderate enlargement (1:3.7) showed no microscopic abnormalities.

PATHOGENESIS OF FETAL ERYTHROBLASTOSIS

The diversity of findings in fetal erythroblastosis becomes less bewildering when viewed against the background of the genesis of its manifestations. The accompanying diagram attempts to give a genetic concept based on Levine's hypothesis that passage of Rh antibodies from an Rh negative mother to the Rh positive fetus is responsible for the hemolytic anemia in the latter. All the other manifestations are logical sequelae in keeping with our knowledge of similar changes in other conditions. This concept was developed in greater detail in a previous publication.² The damage of the liver is placed in the center of the picture, the hemolytic anemia and anoxemia being the fundamental preliminary changes, the other changes resulting from it. The arrows show the course and sequence of events.

There still remains the question why children with various manifestations of the disease are born in the same family. How can it be explained that 1 child has congenital hydrops, another congenital anemia and the third icterus gravis? The order is not necessarily from the least severe form (anemia) to the most severe (hydrops). Four points attempt to answer this question:

CONDITIONS INFLUENCING SEVERITY OF FETAL ERYTHROBLASTOSIS AND ITS MANIFESTATIONS

1. Age of fetus when Rh antibodies begin to act on it.
2. Length of time during which fetus is exposed to such action.
3. Strength of Rh antibodies of which the titer of anti-Rh agglutinins in the blood of the mother may or may not be a measure. There is evidence available suggesting that there is no direct relation between the titer of these antibodies in the mother and the severity of the disease in the baby. However, this needs to be investigated on larger material.
4. Permeability of the placenta. It is possible that there are quantitative differences in different women and at different times even in the same woman.

CONCLUSIONS

Hemolytic anemia due to the action of Rh antibodies is not only the initial cause of fetal erythroblastosis, but it explains the genesis of the complex manifestations of the disease. Damage of hepatic parenchyma is the fundamental change.

The finding of the characteristic distribution of the Rh factor (father and child Rh positive, mother Rh negative) may be used as corroborative evidence favoring the diagnosis of erythroblastosis, but it should not be used as such to the exclusion of other diagnostic criteria. The supportive evidence is greater when anti-Rh agglutinins are found in the Rh negative mother.

ABSTRACT OF DISCUSSION

DR. A. G. FOORD, Pasadena, Calif.: Dr. Fisk in our laboratory demonstrated that the blood of all newborn babes is Rh positive if antiserum produced in guinea pigs by injection of monkey blood is used for the tests. Consequently serums of human origin are essential, and several serums should be used, all of which should be tested against sufficient bloods to determine their subtype. Recently we had the problem of studying a physician's wife who was pregnant. She had had one normal child and then one stillborn with hydrops, at which time she had weak anti-Rh agglutinins in her blood. During this, her third, pregnancy we examined her blood for anti-Rh agglutinins at various intervals, including just before delivery, and were never able to demonstrate any agglutination of Rh positive red cells from several adult persons. She delivered an anemic, full term, living baby with all the findings of erythroblastosis. Multiple transfusions from Rh negative donors saved the child. We had saved the serums from the mother and repeated the agglutination tests with cord bloods obtained from newborn infants. By this method agglutinins were easily demonstrated. I have no explanation for this phenomenon, but as a certain number of women who have delivered babies with erythroblastosis become pregnant subsequently the demonstration of anti-Rh agglutinins in these women's bloods can best be done by using cord bloods.

DR. ISRAEL DAVIDSOHN, Chicago: Dr. Foord reveals a source of false positive tests if an anti-Rh guinea pig immune serum is used. With such serum the blood of all newborn babies is Rh positive, whereas with human anti-Rh serum the incidence of Rh negative reactions in the blood of newborn babies is similar to that in adults. For the present, human anti-Rh serum is preferable for clinical work. It is advisable to use three immune serums, differing in their specificity. At least one of them should react with about 85 per cent of the population. False results are dangerous. A false positive result may prompt use of an Rh positive donor for an Rh negative recipient and be responsible for a transfusion reaction. False negative results may lead to selection of incompatible donors and also to a wrong conclusion in the interpretation of a so-called bad obstetric history. One may be able to prognosticate to some extent regarding the probable occurrence of erythroblastosis in future pregnancies, by examining all living children. If one of them is Rh negative, the father is heterozygous Rh positive and his children have an even chance to be Rh positive or Rh negative. The Rh negative children will be free of erythroblastosis, at least as far as it is due to the Rh factor. Similar information is sometimes obtainable by examining the husband's parents. If one of them is Rh negative the inference is justified that the husband is heterozygous Rh positive. The relation between the Rh factor in the baby and erythroblastosis has been dramatically illustrated by several reports of erythroblastosis in Rh positive infants, while the Rh negative twins were free of disease. The best time to test for anti-Rh agglutinins in the blood of mothers of babies with erythroblastosis is not immediately after delivery but about ten days later. It is probable that, until birth, there is an interchange of antigenic substances and antibodies between mother and baby. The baby's antigenic substances may neutralize the specific antibodies in the blood of the mother. This explains the higher titer, after an interval of from ten to fourteen days since delivery, when possibility of neutralization has been eliminated.

Earliest Medical Reference Relating to a Miner.—The earliest medical reference which may be interpreted as relating to a miner is to be found in the *Corpus Hippocraticum*. In the fourth book of *Epidemics* the following case history is to be found: A man from the mines had the right hypochondrium distended. His spleen was enlarged, and his abdomen was distended and hard. His respiration was labored, and he was both pale and livid. The disease then attacked the left knee. There was a relapse in the entire body and finally a crisis.—Rosen, George: *The History of Miners' Diseases*, New York, Schuman's, 1943.

ADMINISTRATION OF PENICILLIN
BY MOUTH

PRELIMINARY REPORT

PAUL GYÖRGY, M.D.
H. N. VANDEGRIFT, M.D.
WILLIAM ELIAS, Ph.D.
L. G. COLIO, B.A.
PHILADELPHIA
F. M. BARRY, M.D.
AND
J. D. PILCHER, M.D.
CLEVELAND

The view is generally held that when given by mouth penicillin is destroyed by stomach acid and in consequence only very small amounts can be detected in the urine.¹ In contrast, when given by intravenous or intramuscular injection, urine recoveries of penicillin were reported to average approximately 60 per cent.¹ Combined administration of penicillin and sodium bicarbonate was followed by the appearance of penicillin in the blood. The detectable levels were, however, found to be very low.² In subjects suffering from achlorhydria accompanying pernicious anemia the urinary excretion of penicillin given by mouth reached relatively high figures with appreciable blood levels (up to 40 per cent).³

In the light of all these observations, Charney, Alburn and Bernhart³ studied penicillin excretion through the kidneys after combined administration of penicillin and buffer salts with a buffering range not reaching alkaline p_{H} values. It is known that penicillin is sensitive not only to acid but also to alkaline reaction. Thus the use of sodium bicarbonate or similar alkaline antacids was considered undesirable and unpractical.

Trisodium citrate was found by Charney, Alburn and Bernhart to be a suitable buffer with the proper buffering range. Administration of 1.0 to 5.0 Gm. of trisodium citrate and 20,000 to 30,000 units of penicillin (both dissolved in 200 to 400 cc. of water) by mouth given two hours after breakfast resulted in appreciable increase of the urinary excretion of penicillin when compared with control experiments in which no buffer was used. The figures for urinary excretion of penicillin given by mouth on a fasting stomach were only slightly increased by the simultaneous administration of buffer and were higher than in the experiments in which penicillin was given after breakfast.

The results of these investigations stimulated the extension of the studies in the clinical field with special reference to the therapeutic possibilities, and the blood

levels of penicillin when given by mouth with and without buffer (sodium citrate).

Figures of urinary excretion of penicillin are not an accurate yardstick of the therapeutic effect penicillin might exert while passing through the body. On the other hand, the fact that penicillin given by mouth appears in the urine proves that it is absorbed from the gastrointestinal tract.

Gonorrhea offered the best approach for the therapeutic evaluation of penicillin when given by mouth. The rapid cure of gonorrhea by injected penicillin gave a reliable basis of comparison. If it is effective at all, rapid therapeutic effects would be expected after oral administration of penicillin. Even an unsuccessful attempt would cause no significant delay or harm and could be quickly followed by well established therapeutic procedures.

THE TREATMENT OF GONORRHEA

Table 2 contains the summary of observations on 18 male adults and on 5 children (girls, 3 weeks to 6 years) in whom gonorrhea was treated with penicillin given by mouth. The majority of these cases was resistant to sulfonamides. The doses of penicillin

TABLE 1.—Serum Penicillin Levels

Units of Penicillin	Vol. of Standard Serum, cc.	Vol. of Broth to 1.0 cc.	Con- version Factor	Standard 0.05 Unit per Cc. Broth		Unknown Serum	
				Read 8 a.m.	Read 10 a.m.	8 a.m.	10 a.m.
0.05	1.0	0	1	—	—	—	—
0.04	0.80	0.20	1.25	—	—	—	—
0.03	0.60	0.40	1.66	—	—	—	—
0.02	0.40	0.60	2.5	—	—	—	—
0.01	0.20	0.80	5.0	+	+	—	—
0.0075	0.15	0.85	6.66	+	+	—	—
0.005	0.10	0.90	10	+	+	—	—
0.0025	0.05	0.95	20	+	+	+	+
0.001	0.02	0.98	50	+	+	+	+

Controls: 1. Plain broth + streptococci = growth
2. Serum — no streptococci = no hemolysis
3. Erythrocytes — no streptococci = no hemolysis
4. Erythrocytes + streptococci = 4 hemolysis

— = no hemolysis; 4 = complete hemolysis.

varied from 10,000 units (every three to four hours) in children to 15,000 to 40,000 units (every three hours) in adults for two to three days in combination with trisodium citrate (1 to 5 Gm. per dose). In all these cases cure was achieved in one to three days and with doses which appear to be comparable to, and not out of line with, the customary doses of penicillin when given by injection. It appears, therefore, that penicillin, at least in combination with a buffer such as sodium citrate, is an effective therapeutic agent against gonorrhea, even when given by mouth.

The amounts of penicillin and of sodium citrate used as well as the type of buffer salt may undergo modifications in the future, depending on the outcome of continued and extended investigations. In this connection, observations made on 3 girls (2 to 5 years) not included in table 2 are important. In these 3 patients the administration of 10,000 units of penicillin (every four hours) given with 1 or 2 Gm. of sodium citrate with a total dose of 200,000 to 300,000 units was followed by prompt but only temporary clinical cure of the gonorrhea. The treatment was repeated twice with identical temporary results. The same doses of penicillin given intramuscularly (every three hours) resulted in permanent cure in these 3 children. Thus, either the doses were too low in oral administration or the oral treatment should have been continued over a longer period and with perhaps

This paper was presented, in abbreviated form, by one of us (P. G.) on Dec. 5, 1944 at the postgraduate course in internal medicine (Pediatric Section) of the American College of Physicians, Philadelphia.

The penicillin was provided by the Office of Scientific Research and Development, from supplies assigned by the Committee on Medical Research for experimental investigations recommended by the Committee on Chemotherapeutics and Other Agents of the National Research Council.

From the Department of Pediatrics, University of Pennsylvania School of Medicine; Wyeth Institute of Applied Biochemistry, Philadelphia; University Hospitals, Department of Surgery, Western Reserve University School of Medicine and City Hospital, Department of Pediatrics, Cleveland.

1. Rammekamp, C. H., and Keefer, C. S.: The Absorption, Excretion and Distribution of Penicillin, *J. Clin. Investigation* 22: 425-437, 1943.

2. Rammekamp, C. H., and Helm, J. D., Jr.: Studies on the Adsorption of Penicillin from the Stomach, *Proc. Soc. Exper. Biol. & Med.* 54: 324-327, 1943.

3. Charney, J.; Alburn, H. E., and Bernhart, F. W.: Urinary Excretion of Penicillin in Man After Oral Administration with Gastric Antacids, *Science*, to be published.

administration at shorter intervals. It is of interest to note that these relapses on oral medication occurred in chronic gonorrhea in young girls, whereas gonorrhea in adults seemed in these studies to present less difficulties.

Penicillin, in combination with sodium citrate, given by mouth, caused rapid and permanent cure of gonorrheal conjunctivitis in 3 treated infants (aged 7, 17 and 40 days). The doses used were 10,000 units of penicillin and 1 Gm. of sodium citrate every three to four hours with a total dose of 140,000, 180,000 and 200,000 respectively. The effect was always very prompt and smears became negative after three to four doses.

TREATMENT OF OTHER DISEASES

In a 7 year old girl with nonspecific streptococcal vaginitis penicillin (10,000 units) with 2.0 Gm. of sodium citrate every three hours given by mouth in

organisms were seen and in thirty hours dark field examination was completely negative. At the end of the second day treatment was changed to the standard scheme of intramuscular administration.

All the foregoing preliminary and scattered observations support the conclusions that, even apart from gonorrhea, penicillin given by mouth, in combination with a buffer salt such as sodium citrate, can and does exert a beneficial therapeutic effect comparable in speed to parenteral administration.

In the light of these clinical results the figures for urinary excretion of penicillin gain more practical significance. In this connection it should be noted that, according to a recent publication⁵ which appeared after the present clinical and experimental studies were concluded, 8 to 33 per cent of 100,000 units of penicillin given by mouth to normal human subjects, without added buffer, was found to be excreted in the

TABLE 2.—Patients Treated with the Combination of Penicillin and Sodium Citrate (5 Gm. per Dose) Administered by the Oral Route

No.	Name	Sex	Diagnosis	Proof by	Dosage, Units	Total Dose Given, Units	Results
1	W. D.	♂	Gonococcal urethritis	Smear	15,000 q 3h × 16	240,000	Clinical cure
2	R. C.	♂	Gonococcal urethritis	Culture	15,000 q 3h × 16	240,000	Clinical cure, cultures negative
3	P. H.	♂	Gonococcal urethritis	Smear	20,000 q 3h × 16	320,000	Clinical cure
4	M. D. H.	♂	Gonococcal urethritis	Smear	15,000 q 3h × 16	240,000	Clinical cure
5	T. V.	♂	Gonococcal urethritis	Culture	20,000 q 3h × 16	320,000	Clinical cure; discharge stopped in about 16 hours; culture negative
6	S. J.	♂	Gonococcal urethritis	Culture	20,000 q 3h × 16	320,000	Clinical cure; culture negative after 24 hours
7	M. C.	♂	Gonococcal urethritis	Smear	20,000 q 3h × 16	320,000	Clinical cure
8	W. R.	♂	Gonococcal urethritis	Smear	20,000 q 3h × 24	480,000	Clinical cure
9	R. P.	♂	Gonococcal urethritis with perineal abscess plus perineal urethral fistula	Culture	15,000 q 3h × 16	240,000	Clinical cure; culture became negative
Readmitted 2 weeks later				Culture	20,000 q 3h × 24	480,000	Clinical cure; culture became negative
Checked 3 weeks later				Cultures and smears at repeated examination (5 ×) found negative; the persisting slight tract (gonococcal negative) discharge was considered to be due to his abnormal urinary			
10	M. H.	♂	Gonococcal urethritis and epididymitis	Culture	20,000 q 3h × 16	320,000	Clinical cure within 24 hours
11	K. T.	♂	Gonococcal urethritis	Smear	40,000 q 3h × 12	480,000	Clinical cure
12	A. B.	♂	Gonococcal urethritis	Culture	20,000 q 3h × 16	320,000	Clinical and bacteriologic cure
13	O. M.	♂	Gonococcal urethritis	Culture	20,000 q 3h × 24	480,000	Clinical cure; culture became negative on the third day of treatment
14	C. B.	♂	Gonococcal urethritis	Smear	40,000 q 3h × 12	480,000	Clinical cure
15	J. G.	♂	Gonococcal urethritis	Culture	20,000 q 3h × 16	320,000	Clinical and bacteriologic cure
16	E. P.	♂	Gonococcal urethritis	Culture	20,000 q 3h × 16	320,000	Clinical and bacteriologic cure
17	T. B.	♂	Gonococcal urethritis	Smear	20,000 q 3h × 16	320,000	Clinical cure
18	C. T.	♂	Gonococcal urethritis	Culture	20,000 q 3h × 16	320,000	Clinical and bacteriologic cure
19	D. L.	♀, 4½ yr.	Gonococcal vaginitis	Smear	10,000 q 3h × 30*	300,000	Clinical cure in 24 hours
20	V. A.	♀, 4½ yr.	Gonococcal vaginitis	Smear	10,000 q 3h × 20*	200,000	Clinical cure in 24 hours
21	D. H.	♀, 3 yr.	Gonococcal vaginitis	Smear	10,000 q 3h × 20†	200,000	Clinical cure
22	D. L. B.	♀, 6½ yr.	Gonococcal vaginitis	Smear	10,000 q 4h × 20*	200,000	Clinical cure
23	J. G.	♀, 3 wks.	Gonococcal vaginitis	Smear	20,000 q 4h × 12*	240,000	Clinical cure

* Received only 2 Gm. of sodium citrate with each dose of penicillin.

† Received only 1 Gm. of sodium citrate with each dose of penicillin

a total dose of 200,000 units was followed by rapid and permanent cessation of discharge.

In a 3 year old boy suffering from chronic otitis media with perforation and suppuration (hemolytic streptococcus) treatment with sulfathiazole (an initial dose of 2.0 Gm. and then 0.5 Gm. every four hours for twenty-three days) was of no avail. Penicillin combined with 2.0 Gm. of sodium citrate given by mouth 10,000 units every three hours for twenty doses brought about complete cure, as evidenced by complete disappearance of discharge.

In 1 patient with early acquired syphilis and positive dark field examination⁴ the combined administration of penicillin (30,000 units every three hours) and sodium citrate (5 Gm. per dose) by mouth did not differ in its result materially from that which ordinarily follows parenteral administration of penicillin. Treponema pallidum decreased in number at eighteen hours. At twenty-four hours only a few distorted

urine. Simultaneous administration of sodium bicarbonate had decreased the figure for urinary excretion, probably because of destruction of penicillin in the alkaline medium of the gastrointestinal tract.

It was expected that valuable information could be gained from following the blood level figures for penicillin after oral administration. Such blood tests taken in hourly intervals after ingestion of penicillin will also illustrate the shape of the blood penicillin curve and its duration.

Among the methods advanced for the assaying of small quantities of penicillin in body fluids are those proposed by Rammelkamp,⁶ Wilson⁷ and Rake and Jones,⁸ which differ somewhat in detail but are all

⁴ This observation was kindly put at our disposal by Dr. H. N. Cole and Dr. G. W. Binkley, University Hospitals, Cleveland.

⁵ Free, A. H.; Leonards, J. R.; McCullough, D. R., and Biro, P. F.: The Urinary Excretion of Penicillin After Oral Administration to Normal Human Subjects, *Science* 100: 431-432, 1944.

⁶ Rammelkamp, C. H.: A Method for Determining the Concentration of Penicillin in Body Fluids and Exudates, *Proc. Soc. Exper. Biol. & Med.* 51: 95-97, 1942.

⁷ Wilson, C.: A New Rapid Method for Penicillin Assay, *Nature, London* 152: 475, 1943.

⁸ Rake, G., and Jones, H.: A Rapid Method for Estimation of Penicillin, *Proc. Soc. Exper. Biol. & Med.* 51: 119-121, 1945.

based on the inhibition of hemolysin production by a selected strain of streptococcus.

The sample protocol (table 1) illustrates the procedures used in these investigations.

The following modifications were incorporated in our procedures:

1. The total volume of serum required was more than in other methods, but a greater accuracy was obtained.

2. The broth used consisted of 2 per cent Difco Tryptose, 1 per cent neopeptone, 0.85 per cent sodium chloride, pH 7.2.

3. The test organism was a group A hemolytic streptococcus, number C203, grown for eighteen to twenty hours on 1.0 per cent horse serum agar of the foregoing medium. The organisms were washed twice with 0.85 per cent saline solution to remove all traces of hemolysin. A final inoculum of from 5,000 to 10,000 organisms per tube was sufficient.

4. Initial tests indicated a lysis of both rabbit and sheep erythrocytes by complement in the serum samples. Substitution of human type O erythrocytes worked very satisfactorily.

5,000 to 10,000 streptococci, giving a final volume, with the 1.0 cc. serum dilution, of 2 cc. per tube.

6. Incubation at 37 C. proceeded for sixteen to eighteen hours.

7. Initial readings were made without shaking the tubes. After thorough resuspension of the erythrocytes and two additional hours of incubation, final readings were made. Complete hemolysis in tubes containing insufficient penicillin was the usual rule. Incomplete hemolysis at the second reading in 1.0 cc. serum tubes, in comparison to complete hemolysis in the standard series, was considered as indicative of a trace of penicillin, although, if allowed to incubate longer, such tubes eventually showed complete hemolysis. In agreement with Rammelkamp, the tubes showing no hemolysis were sterile.

8. Potencies were obtained by multiplication of the lowest unitage of standard penicillin showing a negative tube times the conversion factor of the smallest volume of active sample as in the protocol; i. e., $0.02 \times 10 = 0.20$ unit of penicillin per cubic centimeter of serum.

TABLE 3.—Patients After Overnight Fasting
Penicillin Given by Mouth Thirty Minutes before Breakfast (Cereal, Cream, Sugar, Toast, Butter, Egg, Milk)

No.	Name	Age	Diagnosis	Calcium Penicillin, Units		Blood Levels—Units per 100 Cc. Serum Hours after Ingestion of Penicillin			
				With Buffer	Without Buffer	1	2	3	4
1	J. G.	8 yrs.	Postoperative appendectomy.....	40,000	.....	15	7.5	3.75	None
2	D. D.	9 yrs.	Concussion.....	.....	40,000	3.75	None	None	None
3	M. L.	9 yrs.	For study.....	40,000	.....	7.5	2.0	Trace	Trace
4	L. M.	9 yrs.	.....	.....	40,000	7.5	None	None	None
5	L. S.	11 yrs.	.....	40,000	.....	5.0	2.5	Trace	Trace
6	R. G.	12 yrs.	.....	.....	40,000	2.5	Trace	Trace	None
7	E. O.	6 yrs.	Traenectomy.....	40,000	.....	20	10	5	Trace
8	D. W.	6 yrs.	Postoperative tonsillectomy and adenoidectomy.....	.....	40,000	5	2.5	Trace	None
9	L. G.	12 yrs.	Rheumatic heart.....	40,000	.....	10	5.5	2.5	2.5
10	J. D.	2 yrs.	Diabetes mellitus.....	.....	40,000	Trace	Trace	None	None
11	J. G.	3 wks.	Gonococcal vaginitis.....	20,000	.....	100	40	20	20
12	M. B.	4 wks.	Rickets.....	.....	20,000	20	3.3	None	None

TABLE 4.—Patients After Overnight Fasting
First Meal Given Four Hours after Penicillin (by Mouth)

No.	Name	Age	Diagnosis	Calcium Penicillin, Units		Blood Levels—Units per 100 Cc. Serum Hours after Ingestion of Penicillin			
				With Buffer	Without Buffer	1	2	3	4
1	T. M.	9 yrs.	.....	40,000	.....	2.5	None	None	None
2	G. S.	7 yrs.	.....	.....	40,000	10	2.0	None	None
3	J. G.	7 yrs.	.....	40,000	.....	10	2.5	2.0	None
4	H. O.	10 yrs.	.....	.....	40,000	2.0	None	None	None
5	L. M.	9 yrs.	For study.....	40,000	.....	5.0	5.0	3.75	None
6	A. W.	8 yrs.	.....	.....	40,000	7.5	5.0	Trace	None
7	J. C.	8 yrs.	Tuberculosis ?.....	40,000	.....	10	5.0	2.5	Trace
8	M. F.	7 yrs.	.....	.....	40,000	7.5	5.0	3.75	3.75
9	A. R.	7 yrs.	.....	40,000	.....	20	2.5	2.0	2.5
10	S. O.	6 yrs.	.....	.....	40,000	5.0	Trace	None	None
11	J. B.	7 yrs.	.....	40,000	.....	20	7.5	7.5	7.5
12	K. H.	7 yrs.	.....	.....	40,000	5.0	None	None	None

The possibility of Rh interference exists but is remote. An alternative method, using sheep erythrocytes, which may be used if human cells are not available, is to heat serum samples in a water bath at 56 C. for five minutes. Control series of standard penicillin in human serum, with or without complement, and in plain broth, demonstrated no destruction of penicillin by this treatment.

No evidence was found in any series of heated or unheated serums against human or sheep erythrocytes, controlled by broth dilutions of standard penicillin, to support the contention of Holmes and Lockwood⁹ that human serum contained an antipenicillin factor.

With respect to the high incidence of complement interference in these assays it must be borne in mind that the tests were made on children, in whom the incidence of occurrence of high titer complement may possibly be greater than in adults.

5. The inoculum consisted of 1 cc. of 4 per cent erythrocytes, washed twice with isotonic solution of sodium chloride and

The sample protocol may be extended to include more than 1 unit by diluting serum 1:50 and using volumes decreasing by 0.1 cc. quantities.

With the method used 0.02 unit per cubic centimeter was accurately determined. "Trace" signifies levels between 0.01 and 0.02 unit per cubic centimeter.

In this group of experiments, penicillin calcium was used either in the form of the usual dry preparation in bottle or in the form of tablets especially made up with trisodium citrate (1 Gm. of sodium citrate with 10,000 units of penicillin calcium in one tablet¹⁰). Each day 2 children of closely similar age and weight received 40,000 units of penicillin, one in the form of a tablet with buffer dissolved in water and the control without buffer in freshly prepared aqueous solution. The results are summarized in tables 3 and 4. When penicillin was given by mouth thirty minutes before breakfast, sodium citrate administered simultaneously increased the abso-

⁹ Holmes, L. F., and Lockwood, J. S.: Studies on Bissay of Penicillin. *Am. J. M. Sc.* 207: 267-268, 1944.

¹⁰ Furnished by Wyeth Incorporated.

lute blood levels and also prolonged the presence of penicillin in the blood. Penicillin could be detected in the blood (with one exception) four hours after ingestion, whereas it is a rarity to find penicillin in the blood even three hours after intramuscular injection of aqueous penicillin solution.¹¹ When penicillin was ingested after overnight fasting and four hours before the first meal, the effect of the buffer salt was less pronounced but still significant.

The investigations on blood levels of penicillin following its oral administration are being continued under varied experimental conditions. However, the results so far obtained allow a generalization, i. e. ingested penicillin reaches the circulation in therapeutic concentration and in prolonged flow from the intestine.

CONCLUSIONS

1. Penicillin given by mouth in combination with a suitable buffer salt, such as trisodium citrate, was found to be therapeutically effective in a number of cases of gonorrhea and other diseases.

2. The effective doses were comparable to the doses routinely used in parenteral administration.

3. Combination of penicillin and sodium citrate given by mouth produces greater and more prolonged increase of penicillin blood levels than penicillin ingested without a buffer salt.

CURARE IN ANESTHESIA

HAROLD R. GRIFFITH, M.D.

MONTREAL, CANADA

Good muscular relaxation is one of the requirements for efficient abdominal surgery, and in order to obtain this relaxation surgeons and anesthetists have sometimes used anesthetic drugs and methods which are toxic or hazardous. The introduction of curare into clinical medicine has made it possible for us to obtain complete muscular relaxation at any time during anesthesia with nontoxic controllable anesthetic agents. After more than two years of careful clinical observation I have come to the conclusion that curare is a safe drug to use in combination with certain anesthetic agents, provided it is administered under properly controlled conditions.

The story of the transformation of this South American Indian arrow poison into an anesthetist's tool may be told briefly as follows: Curare has been known to science since 1595, when Hakluyt referred to it in his description of Sir Walter Raleigh's voyage up the Orinoco. In 1840 Claude Bernard,¹ in a series of famous physiologic experiments, confirmed the observations which Watterton and Brodie had made in 1814, that curare action was paralysis due to interruption of the neuromuscular mechanism. The drug therefore became of value in the physiologic laboratory for the study of muscle activity without interference from nervous impulses. Clinicians had more than once cast hopeful eyes toward the possible use of curare in the treatment of spastic disease of the muscles, but always its poisonous reputation and the presence of cardiac depressants and other adulterants in the available sup-

plies made a clinical trial seem too dangerous. No one knew the exact botanic sources of curare or the chemical composition of its active principle. In 1938 Richard C. Gill,² an American who had lived for years in the upper Amazonian jungles of Ecuador and who was familiar with the Indian folklore and mysticism which has surrounded the "flying death," as curare is called in the jungle, brought back to the United States the first adequate supply of the drug with properly labeled specimens of the various plants which are used by the Indians in the manufacture of crude curare. Professor A. R. McIntyre³ of the University of Nebraska then subjected this supply of curare to the first pharmacologic study by modern methods. Through cooperation with the Research Laboratories of E. R. Squibb and Sons a purified product was produced which exhibited the true curare action without toxic side effects and which seemed safe for human experimentation. The present commercial product, which is known as "Intocostin" (Extract of Purified Curare, Squibb), is marketed in 5 cc. vials of a pale amber liquid which contains 20 mg. of active curare substance to each cubic centimeter. It is obtained from the single plant *Chondrodendron tomentosum* and has a selective action affecting first the muscles of the throat and neck, then the skeletal muscles of the extremities, chest and abdomen, and the diaphragm last or not at all. It has no effect on involuntary or cardiac muscle in therapeutic doses.

The first large scale test of the new curare on human subjects was made by Professor A. E. Bennett⁴ of the University of Nebraska, who used it to soften the traumatic effects of convulsive shock therapy in psychiatric patients. This use for curare in conjunction with both metrazol and electric shock therapy has become widespread in mental hospitals, and now many thousand injections have been given without harmful effect. With this pharmacologic and clinical evidence of the safety of "Intocostin" we felt that it might be tried on patients under general anesthesia, and so at the suggestion of Dr. L. H. Wright of New York we began using it in patients under cyclopropane anesthesia at the Homoeopathic Hospital of Montreal in January 1942. The results obtained were dramatically successful, but we proceeded cautiously until we became fairly sure that there were no postoperative effects to worry about, and it seemed advisable to publish a preliminary report⁵ and to seek confirmation of our results by other workers. The reports which have been published and which have been communicated to me personally by many anesthetists are unanimous that curare has a useful place in anesthesia, and that its use appears to be safe. The most convincing and valuable work which has been done is that of Dr. S. C. Cullen⁶ of the State University of Iowa, who has been using curare routinely in abdominal surgery since 1942 and who has now reported over 1,000 successful administrations. I myself have administered curare only 300 times, because I have preferred to give it only to those patients who need extra relaxation and.

2. Gill, R. C.: *White Water and Black Magic*, New York, Henry Holt & Co., Inc., 1940.

3. McIntyre, A. R., and King, R. E.: d-Tubocurarine Chloride and Choline Esterase, *Science* **97**: 69, 1943; Contraction of Denervated Muscle Produced by d-Tubocurarine, *ibid.* **97**: 516, 1943.

4. Bennett, A. E.: Preventing Traumatic Complications in Convulsive Shock Therapy by Curare, *J. A. M. A.* **111**: 322 (Jan. 27) 1940.

5. Griffith, H. R., and Johnson, G. E.: The Use of Curare in General Anesthesia, *Anesthesiology* **32**: 418, 1942; Griffith, H. R.: Use of Curare in Anesthesia and for Other Clinical Purposes, *Canad. M. A. J.* **50**: 144, 1944.

6. Cullen, S. C.: The Use of Curare for the Improvement of Abdominal Muscle Relaxation During Inhalation Anesthesia, *Surgery* **11**: 2, 1943; Clinical and Laboratory Observations on the Use of Curare During Inhalation Anesthesia, *Anesthesiology* **31**: 166, 1944.

11. Romansky, M. J., and Rittman, G. E.: Method of Prolonging Action of Penicillin, *Science* **100**: 196-198, 1944; Penicillin: Prolonged Action in Beeswax-Peanut Oil Mixture; Single Injection Treatment of Gonorrhea, *Bull. U. S. Army M. Dept.*, 1944, no. 81, pp. 43-49. Rammelkamp and Keefer.¹

From the Department of Anesthesia, Homoeopathic Hospital of Montreal.

Read before the Section on Anesthesiology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1. Bernard, C.: Note sur la curarine et ses effets physiologiques, *Bull. Gen. de therap.* **60**: 23, 1865.

as I will show in my statistics, that is in a comparatively small proportion of our total cases.

I do not propose in this clinical report to discuss the physiologic and pharmacologic action of curare. It is sufficient to state that it acts on the neuromuscular synapse probably by neutralization of the acetylcholine reaction. It effectively blocks synaptic transmission between preganglionic and postganglionic fibers of the sympathetic division of the autonomic nervous system. Curare is eliminated very rapidly, partly by destruction in the liver and partly by excretion unchanged by the kidneys. No evidence of any visceral damage has been produced and no direct effect on the heart reported. It may apparently be given to patients with damaged liver or kidney without any prolongation or intensification of the effect. We have used it on some very poor risk patients quite harmlessly, although the patients for whom it is most needed for relaxation are healthy muscular individuals. Respiratory depression may occur following curare injection and has been noted in about 10 per cent of our cases. However, this is always transitory and may easily be controlled by the same methods which we employ to control respiratory depression occurring from other causes during anesthesia. An overdose causing complete respiratory paralysis can be overcome by artificial ventilation of the lungs with oxygen during the ten or fifteen minutes of paresis. Neostigmine bears a close resemblance to a true physiologic antidote to curare, since it acts to inhibit cholinesterase and restore the acetylcholine preponderance at the myoneural junction. For this reason an ampule of neostigmine should always be available when curare is used, although in our experience it has never been necessary to use it.

Most of the patients to whom I have administered curare have been undergoing abdominal operations under cyclopropane anesthesia. For years I have found cyclopropane unmixed with ether to be generally satisfactory for abdominal surgery, and I have used it in a much larger proportion of cases than do many other anesthetists. I myself have administered cyclopropane over 10,000 times and have been lucky enough to have all these patients leave the operating room alive, but I must admit that there are times when it is difficult to secure complete muscular relaxation with cyclopropane alone. Since we have had curare we do not try to push a resistant patient into deep anesthesia with cyclopropane; but at the first evidence of inadequate relaxation we make an intravenous injection of curare. This takes effect within a few seconds and is usually sufficient when combined with cyclopropane to maintain relaxation as long as it is required during the operation. The duration of the effect of a single dose of curare when not combined with cyclopropane or other anesthetic agent is not more than fifteen or twenty minutes. The accompanying table shows the incidence of our use of curare in 1,000 consecutive operations. It is noted that curare is, as might be expected, more often needed for upper abdominal and for pelvic surgery than for ordinary appendectomies, and in the extra-abdominal cases it has been employed usually to facilitate endotracheal intubation.

There have been some differences of opinion between various workers as to the proper dose of curare to be used for patients under anesthesia. All are agreed that it is best given intravenously, although intramuscular injections are used for the treatment of patients with spastic disease and "Intocostin" is not irritating to the subcutaneous tissues. The intravenous route secures the most rapid and controllable effect for our purpose. Cul-

len, and more recently Baird and Adams⁷ of the Mayo Clinic, recommend an injection of 2 to 3 cc. of "Intocostin" after the skin incision is made, to be repeated if muscular relaxation is not satisfactory. My routine has been somewhat different. To the average adult patient I usually give a dose of 5 cc. of "Intocostin" (100 mg. of curare) in one intravenous injection. This has proved to be adequate in almost every case and has had no harmful effect in any case except occasional respiratory depression, which, as I have said, is easily controlled. It is a simpler method than to give fractional doses according to the patient's requirement, as recommended by Cullen. Too small a dose will lead to disappointing results, as was the case with some of the earlier investigators—it is the old story of sending a boy on a man's errand. The doses being used in psychiatry for the minimizing of convulsion trauma are smaller than we recommend in anesthesia, but I believe that in the operating room with facilities always at hand for the control of respiration the conditions are safer for large dosage than in most mental hospitals. Our patients have varied in age from 12 to 75 years, and the dose should be reduced in proportion to the weight of a child or to factors of frailness and asthenia in the aged. Whether

One Thousand Consecutive Operations with Curare

Total operations.....	1,000	Curare used, 86 or 8.6%
Abdominal operations.....	478	Curare used, 79 or 16.5%
Appendectomies.....	223	Curare used, 23 or 10.1%
Hysterectomies.....	67	Curare used, 22 or 32.8%
Gallbladder and stomach.....	42	Curare used, 19 or 45.2%
Other abdominal.....	141	Curare used, 15 or 10.6%
Bowel resection.....	4	
Exploratory laparotomy.....	2	
Colostomy.....	2	
Herniotomy.....	3	
Salpingectomy and the like.....	4	
Extra-abdominal operations.....	522	Curare used, 7 or 1.3%
Hemorrhoidectomy.....	1	
	1	
	1	
	2	
	1	
	1	
	1	

curare can safely be used with babies and quite small children remains to be determined by those who work in that field. I have not used it in any case of cesarean section or obstetric delivery.

As I have said, almost all our patients have been under cyclopropane anesthesia with no added ether or other anesthetic agent. There is no doubt that curare works ideally in combination with cyclopropane. I think, however, that it may be used safely with other agents, particularly with nitrous oxide and ethylene. Cullen has shown that with ether the dose of curare should be reduced to one third of that usually used during cyclopropane anesthesia. Experimental studies have shown that this is because ether itself has a pronounced curariform action and that the myoneural junction is already partially paralyzed. If this factor is kept in mind curare may be used satisfactorily during ether anesthesia, and relaxation and a quiet abdomen obtained without deep anesthesia.

I have used curare in conjunction with sodium pentothal in only 1 case, but Dr. Fernando Hudon of Quebec, who uses pentothal for much abdominal surgery, has obtained excellent results with the combination of "Intocostin" and pentothal in a fairly large series of cases.⁸ There seems to be no significant change in respiration and pulmonary ventilation with this combination.

7. Baird, J. W., and Adams, R. C.: Curare in General Surgery, Proc. Staff Meet., Mayo Clin. 19: 193, 1944.
8. Hudon, F.: L'emploi du curare comme adjuvant de l'anesthésie générale, Laval méd. 9: 242, 1944.

Preoperative medication does not seem to have any effect on curare action. Cullen has stated that atropine or scopolamine is apparently essential in the premedication. Our experience has not borne out this theory, as at least half of our patients have received neither of these drugs, and I can see no difference in the curare action. Nor have we had any special difficulty with hypersecretion of mucus which might be attributed to curare. About 10 per cent of our curare patients received a moderate dose of solution of tribromoethanol previous to cyclopropane, and here again there has been no significant change in the curare effect. The complete absence of all postoperative effects from curare has been one of the most striking and encouraging features of this whole investigation.

Much more clinical and laboratory experience will be needed before we can come to any conclusion as to the permanent place of curare in anesthesiology. However, in view of our experience so far I venture to predict that it will have some effect in reducing the incidence of spinal anesthesia, since the indication for many spinal anesthetics is in order to obtain abdominal muscular relaxation; and also that curare will increase the use of pure cyclopropane or pentothal anesthesia for abdominal surgery without the addition of ether and thus reduce postoperative complications. May I close with an urgent word of caution—curare is still a poison and, like every other poison, it should be handled intelligently and only by experienced physicians.

3445 Northcliffe Avenue.

ABSTRACT OF DISCUSSION

DR. STUART C. CULLEN, Iowa City: Although the first enthusiasm for the use of curare as a means of improving muscular relaxation has not yet reached its zenith, it appears likely that this drug, in the purified and standard form known as "Intocostin," will weather the discredit it will most assuredly receive from indiscriminate users and become a beneficial adjunct to the anesthetist's catalogue of drugs. It seems untenable that a drug with such a lurid history and with so potent an effect should be so incapable of producing acute or chronic damage. Extensive and painstaking investigation of this drug in the past has failed to disclose any injury to tissue except that resulting from asphyxia associated with unrelieved respiratory paralysis. Current clinical and laboratory research with the more purified form of curare has not altered the conception of any of the significant features of the action of the drug. These later inquiries have corroborated the innocuousness of the drug in its action on the heart, the peripheral circulation, the liver, the kidney and the striated muscle. This lack of positive findings does not, however, belittle the necessity for continued close scrutiny of the action of curare in the clinic and in the laboratory. It is still necessary to know its effect on the smooth muscle, its placental permeability, its effect on the constituents of the blood, its effect on cortical and medullary cells and its ultimate effectiveness in improving the anesthetic technic so that more patients will return home sooner and in better shape. With the exception of Dr. Griffith's technic of administration, I am thoroughly in accord with all that he has said. On principle, I object to the injection of the same dose to all persons of the same age or physical state without regard to the particular demands of the situation. There cannot help but be overdosage in some instances and underdosage in others. Fortunately, overdosage produces minimal hazard if one is prepared to combat the momentary respiratory paralysis, and no one should employ curare without being so prepared. The chief advantage of curare lies in the fact that its use permits the employment of relatively nontoxic and readily controlled anesthetic agents and technics. Any reduction in morbidity or mortality that may attend the use of curare during anesthesia will be only a reflection of the anesthesiologist's ability to adapt less toxic and more facile agents and technic to the more difficult anesthetic problems.

DR. J. W. BAIRD, Minneapolis: Although curare is a potent poison in large doses, it is proving to be a safe drug when used intelligently. Apparently there is but one absolute contraindication to its use: the inability of the anesthetist to perform artificial respiration adequately and thus successfully combat the respiratory failure which we at times encounter. This point cannot be too strongly stressed. If the drug is to fall into disrepute, I feel that it will be because the anesthetist has not availed himself of the proper apparatus and knowledge to treat the respiratory failures. Profound anesthesia is not used from choice, but rather from necessity, if we are to produce adequate muscular relaxation for abdominal surgery. The profound anesthesia is frequently as shock producing as the surgery itself; however, curare has to a large extent eliminated the necessity of the deeper stages of anesthesia and its accompanying dangers. If there is an advantage in the lighter planes of anesthesia—and I definitely feel that there is—I believe it is advisable to use the drug more or less routinely rather than to rely on it only for the occasional case in which difficulty is encountered in producing relaxation by the usual methods. Consequently we are seeing a better convalescence in the patient who has received curare and has been spared a long profound general anesthesia. Cyclopropane is perhaps the anesthetic agent of choice; although we have used the other anesthetic agents with no untoward results. My associates and I give curare in smaller, divided doses. By adhering to this technic we are avoiding the severe respiratory depressions we see when a large dose of the drug is administered. Granted that this depression is easily controlled by compressing the breathing bag on the gas machine, we feel that it is advisable to avoid this depression if possible and still successfully produce the muscular relaxation needed. Usually the greatest muscular relaxation is needed for opening and closing the abdomen and at the time of exploration. After the exploration is completed and the packs and retractors are in place, a high degree of muscular relaxation is usually unnecessary for good operating conditions. Frequently the initial dose of curare is adequate until the abdomen is to be closed. At this point a supplementary injection is made. However, a smaller dose of the drug is usually adequate for the closure. This dose is frequently 15 to 20 mg. smaller than the initial dose. In a survey recently made at the University of Minnesota Hospitals it was found that the average period of time between the first and second dose of the drug was seventy-five minutes. Another use we have found for the product is for the patient who is resistant to the anesthetic agents. This type of patient is usually heavy and muscular and frequently is a heavy drinker and smoker.

DR. H. R. GRIFFITH, Montreal: I gave the impression, perhaps, that I always use 5 cc. of "Intocostin." That is the usual dose for an average person. If a patient is small or frail, I sometimes go down to 2 or 3 cc. It is a somewhat easier technic to give 5 cc. (100 mg. of drug) in one dose than waiting to see if 2 or 3 cc. is effective and then giving another injection after one sees that the first is not sufficient. There is a question as to whether curare has any anesthetic action. Theoretically I would say no, and I would not recommend it to be used as an anesthetic in any way. There is some evidence, however, that curare in large doses may have an anesthetic action: at least it will produce unconsciousness. Dr. Rolland Whitacre of Cleveland tells me that he has some experience which shows that a patient can be put to sleep with curare alone if he is given enough, without any other anesthetic agent. But that isn't a technic of anesthesia that any of us recommend, and I know he doesn't. Curare is useful in difficult cases for bronchoscopy. A dose of curare for a perfectly conscious patient is a rather terrifying procedure, that is, an ordinary dose of 3, 4 or 5 cc. of "Intocostin," because he is not asleep and he gets a relaxation of his throat and neck, and he thinks he is going to die. But if you are going to do a bronchoscopy on a patient who is well sedated and who has also had curare he will have the bronchoscope in his throat anyway, and he won't have time to think about how unpleasant it is to have relaxation of the throat and neck. In the use of this agent, as well as any other agents or methods, the anesthetic is more important than the agent that is being used, and curare may be very dangerous in the hands of untrained personnel.

Clinical Notes, Suggestions and New Instruments

FULMINATING MENINGOCOCCEMIA (WATERHOUSE-FRIDERICHSEN SYNDROME)

AN UNUSUAL CASE WITH RECOVERY FOLLOWING TREATMENT
WITH PENICILLIN

J. M. HAYES, M.D., LOS ANGELES, AND
JOHN F. WHALEN, M.D., ALTADENA, CALIF.

The Waterhouse-Friderichsen syndrome is designated as a symptom complex characterized by purpura and shock associated with the postmortem findings of bilateral adrenal hemorrhage. Karsner¹ states that this syndrome may be caused by the streptococcus, pneumococcus or influenza bacillus. Boger² cites a case in which meningococci were demonstrated by direct examination of the peripheral blood smear. He states that this finding has been recorded as occurring only in fatal cases.

In this case the pathologist demonstrated meningococci in the smear after repeated examinations. Boger's report would indicate that this is the first surviving patient in whom the meningococcus was demonstrated in the peripheral blood smear.

Cosgriff³ states that with the increasing prevalence of meningococcal meningitis there was an associated rise in the number of cases of the so-called Waterhouse-Friderichsen syndrome. He cited 4 adult cases seen in the New York Presbyterian Hospital in the course of eight months. Up until 1942 only 103 cases had been reported, with apparently three recoveries. Ninety per cent of these were in infants or children under the age of 9 years. Cosgriff describes the postmortem findings as characterized by invariable hemorrhage into the adrenals, frequent hemorrhage into the skin, muscles, brain and other organs, focal necrosis of the liver, myocarditis and acute splenic tumor. He states that the infection causing this syndrome is often so overwhelming in nature that early recognition is important so that treatment may be prompt. In the majority of reported cases death has occurred within twenty-four hours after the onset.

Herrick⁴ says that most of the meningococcal infections are bacteremic before they attack the leptomeninges. In speaking of this syndrome associated with meningococcal infection he says "No other infection so quickly slays."

Martland,⁵ in reviewing 19 autopsy cases, states that the medical history and clinical data obtained were not sufficiently comprehensive because death occurred so soon after the onset of the illness.

The most common symptoms they record are headache, vomiting, gastrointestinal symptoms, fever, chills, abdominal pain, general pain over the entire body, cyanosis and ecchymotic and purpuric spots varying in size from small petechiae to large areas, often confluent and forming a maculopurpuric rash over the body. The skin lesions may develop over the body even while the patient is being examined. The patient becomes rapidly worse in a few hours and soon becomes mentally confused, delirious and moribund. Frequently the pulse is imperceptible but may reach 200. The blood pressure may drop to 60 or 50 in a short time. The leukocyte count recorded in 5 cases ranged from 20,200 to 99,500. Positive blood culture was present in only a few cases. In these 19 cases of Martland's, meningococci were obtained from the petechiae in 2 cases. In 5 of these 19 cases intravenous injections of sodium sulfadiazine and dextrose were given with no apparent change in the course of the disease. Intravenous saline solution and adrenal

cortex extract were tried in 5 cases with no apparent result. There was massive hemorrhage of the adrenals in all the typical cases. They stated that bullous lesions with necrosis of the skin were reported and gangrene of the toes or the whole extremity may occur rarely. Bernstein⁶ cited only 1 case in the literature in which gangrene of the toe or causalgia accompanied meningococcal meningitis.

In the report made by Martland in February 1944 he states that the Waterhouse-Friderichsen syndrome is apparently that of a fatal infection with a duration of from eight to forty-eight hours from the time of onset, that it is doubtful whether any patient recovers and that death is due to an overwhelming meningococcal infection rather than to insufficiency of the adrenal cortex.

Herrick believes that the meningococcal infection has a selective affinity for the delicate capillary endothelium of the adrenal. Cosgriff as late as August 1944 suggested that penicillin might prove valuable for the treatment of this condition.

REPORT OF CASE

A white woman aged 27, a schoolteacher, awakened on Aug. 22, 1944 with a slight sore throat. At dinnertime she had a slight headache and went to bed early. At midnight she began to vomit and complained of pain over the body, especially in the abdomen. When I saw her, about 4 a. m., the patient was still vomiting a little; she had pain in the abdomen but there was no definite localization of pain or rigidity. The tenderness was about the same over the left kidney area as over any other part of the abdomen. There were no marks on the body anywhere at this time, which was about 4:30 in the morning, or about four and one-half hours after the onset of the illness. She complained of pain on motion or pressure over the extremities and abdomen. She appeared dazed or mentally confused, answering questions slowly and hesitatingly, and no definite source of the manifest toxicity could be determined.

The possibility of a ruptured appendix was considered, although the period of time from onset of the illness seemed too short for this condition. That she might be taken into a hospital quickly, a ruptured appendix was given as a provisional diagnosis. At about 4:30 a. m. arrangements were made for her to go to the hospital as soon as possible. She arrived in the hospital at 7:30 a. m. The sister in charge telephoned when the patient reached the hospital to say that there was an extensive eruption over the body. Later the sister said that, from the time she went to make the call until she returned to the patient, the purpuric spots had increased noticeably. The patient's mother then volunteered the information that these purpuric spots began to appear about 5 a. m., starting on the right thigh and extending distally with great rapidity. She stated that these spots "popped out just like corn popping." At 9 a. m. the purpuric blemishes of varying size were very extensive over the body; only a few small petechiae appeared on the face. On the upper areas of the body and the upper extremities, the eruptions were larger than those on the face. On the knees, legs and feet there were many large areas with what appeared to be thrombotic centers. Both the great toes and several of the small toes seemed almost gangrenous at this time. At the dorsal area of each foot a purplish discoloration extended proximally from the base of the toes.

The patient had a slightly loose stool. This indicated the possibility of an intestinal infection. Sulfaguanidine was started at once. Because of the rapid progress of the disease, penicillin was administered, 20,000 units of the substance injected intramuscularly at about 9 a. m. and ordered to be given every four hours, although no laboratory report had yet been received. The pulse and temperature were about normal when the patient was seen at her home. Soon after arriving in the hospital the temperature rose to 102 F. and the pulse rate to 136. Approximately three hours after the second dose of penicillin had been administered the temperature dropped to 99 F., the pulse rate

Read at a staff meeting of St. Luke's Hospital, Pasadena, Calif., during October 1944.

1. Karsner, H. T.: *Human Pathology*, ed. 6, Philadelphia, J. B. Lippincott Company, 1942, p. 704.

2. Boger, W. P.: *Fulminating Meningococcemia*, New England J. Med. 23: 385-387 (Sept. 14) 1944.

3. Cosgriff, S. W.: *The Waterhouse-Friderichsen Syndrome: Observations on Associated Adrenal Insufficiency and Report of Four Cases*, Ann. Int. Med. 21: 187-193 (Aug.) 1944.

4. Herrick, W. W., cited by Bord, W.: *Textbook of Pathology*, ed. 4, Philadelphia, Lea & Febiger, 1943, p. 837.

5. Martland, H. S.: *Fulminating Meningococcal Infection*, Arch. Path. 37: 147-158 (Feb.) 1944.

6. Bernstein, P.: *Causalgia and Gangrene: Rare Complications in Meningococcal Meningitis*, New England J. Med. 230: 482-483 (April 20) 1944.

to 80. In the meantime the laboratory report arrived and showed a leukocyte count of 9,600; the urine and blood were within the limits of normal.

About midnight the nurse-reported that the pulse was weak and irregular and that the patient was restless, was confused and complained of pain in the extremities. Her feet and legs were cold and clammy.

The following day an attempt was made to administer intravenous glucose. The vein was easy to enter, but no solution would flow in, although the blood came out quite readily. The blood pressure had now dropped to 60 and at times was almost unobtainable. After several attempts were made to give intravenous glucose without satisfactory results, an ampule of ephedrine was given. About fifteen minutes later the fluid flowed in freely. From this time on not much difficulty was encountered in giving intravenous solutions. At this time adrenal cortex extract was given. Another report from the laboratory showed that the leukocyte count had risen to 47,000 (this was on the second day).

On the third day the patient began to bleed from the nose and the vagina. This was about two weeks from her normal menstrual period. The bleeding was not excessive, but 3 cc. of a hemostatic was given in the hope that it might serve to check hemorrhage from the adrenals. The external bleeding stopped promptly. The patient showed some improvement from the third day on, and on the fifth day there was a decided improvement in her general condition. Several toes were now definitely gangrenous, and many large ulcerated areas were present on the knees, legs and feet. In the centers of these large, ulcerated areas were gangrenous regions, some of them 2 or 3 cm. in diameter. The only one located above the knees was on the right buttock. The temperature rose to 103 F. at this time. This was probably due to the infection in these gangrenous areas.

Large wet antiseptic packs were ordered, to cover all the gangrenous parts on the knees, legs and feet.⁷ The temperature then came down quite promptly. These packs were put on for forty-eight hours and then removed, to be replaced as soon as the temperature began to rise again. The patient was now eating well and on the tenth day sat up in a chair. Except for the pain in her feet, she complained very little. The purpuric spots on the arms, hands and upper part of the body faded gradually, leaving small, purplish spots. Over a period of several days the necrotic areas were cut away from the centers of many of the large ulcers. The antiseptic packs were kept on at intervals to prevent extension of the infection and gangrene. With the aid of these packs we could safely wait for a definite line of demarcation so that nothing but the necrotic tissue need be cut away. Penicillin and sulfaguanidine were discontinued on the eighth day after the patient had entered the hospital. One month later she was taken to the operating room and given spinal anesthesia, and the following toes and fragments of toes were removed: the great toe on the right foot, including the distal end of the metatarsal bone; the distal phalanges of the fourth and fifth toes of the right foot; the great toe of the left foot except the proximal phalanx, and all of the third and fourth toes of the left foot. The wounds were all closed fairly tight and healed with but little further removal of tissue. Two weeks later the patient walked with a pair of improvised shoes. At the end of four weeks following the operation she drove her car to the office. The general condition of the patient is good and she walks with very little impairment in her gait.

CONCLUSION

It is impossible to state definitely that any case presents all of the symptom complex of the Waterhouse-Friderichsen syndrome of meningococic type unless an autopsy is made. The external signs and symptoms seem to place this case in this class. The administration of penicillin perhaps accounts for the favorable result.

1785 Bryant Avenue South.

⁷ Hayes, J. M.: Treatment of Acute Infections of the Extremities, *Minnesota Med.* 16: 225-227 (April) 1933.

FATAL AGRANULOCYTOSIS RESULTING FROM THIOURACIL

M. IRENE FERRER, M.D.; DAVID M. SPAIN, M.D., AND
RICHARD T. CATHCART, M.D., NEW YORK

The use of thiouracil in the treatment of hyperthyroidism has become widespread. It therefore seems timely to point out that the drug is not completely free from harmful effects. Notable among the complications occurring during the course of thiouracil therapy is agranulocytosis. This may have its onset without any warning and end fatally. Himsworth¹ reported 1 fatal case of agranulocytosis occurring during thiouracil treatment. Details, however, are lacking in this case as to the total dosage and duration of treatment. Astwood² reported another fatal case of agranulocytosis. His patient was a man aged 37 with a classic picture of hyperthyroidism. He had received 0.2 Gm. of thiouracil five times a day for twenty-seven days and then 0.4 Gm. five times a day for six days. On the thirty-fifth day he was discharged from the hospital only to be readmitted two days later with severe pharyngitis and a temperature of 103 F. The white blood cell count was 1,100, and no granulocytes were present. Despite intensive treatment with sulfathiazole, liver extract and pentnucleotide the patient died seven days later. Kahn and Stock³ more recently reported still another case of agranulocytic death of a diabetic patient following the use of thiouracil. Their patient received a total dosage of 30.8 Gm. over a fifty-four day period. At this point the white blood cell count dropped to 1,100, with the appearance of a rash and a pharyngitis. Again despite intensive treatment with transfusions, liver extract and penicillin the patient died in a diabetic coma within five days after the onset of the symptoms. Palmer⁴ in a study of 12 thiouracil treated cases observed the depression in the white blood cell count in 2 cases without a change in the differential count. In these 2 cases the white blood cell count returned to normal within three days after discontinuance of the drug. Williams,⁵ in a recent review of 125 cases, observed agranulocytosis in 2 cases; no details are given. In a previous report Williams and Clute⁶ observed 1 case of agranulocytosis in which recovery followed treatment with large doses of pentnucleotides and liver extract. Bartells,⁷ however, in a series of 11 cases noted no untoward effects during the course of the treatment.

Our purpose in this paper is to report an additional case of agranulocytosis following the use of thiouracil, with necropsy.

REPORT OF CASE

History.—A man aged 70, Czechoslovakian, an artist, had fifteen hospital admissions over the past twelve years. Most of these admissions are irrelevant to the present story. Several years before the present admission he had been noted to have an elevated basal metabolic rate and an x-ray shadow in the superior mediastinum interpreted as a substernal thyroid. Because of the age of the patient and the technical difficulties involved, surgical removal of the thyroid was not considered feasible. He was admitted for the fourteenth time Jan. 16, 1944. The chief complaint was weakness and extreme fatigue. The history revealed that he had lost a considerable amount of weight in spite of a good appetite. In addition, he had been suffering from persistent diarrhea and for a few days prior to admission had a productive cough and moderate chest pain.

At that time the patient was extremely emaciated and chronically ill. He was slightly orthopneic and perspired freely. There was a fine tremor of the hands. The thyroid was not palpable. The heart was enlarged to the left, with a systolic

From the First (Columbia University) Medical Division, Bellevue Hospital.

1. Himsworth, H. P.: Thiouracil in the Treatment of Thyrotoxicosis, *J. A. M. A.* 125: 1053 (Aug. 12) 1944.

2. Astwood, E. B.: Treatment of Hyperthyroidism with Thiouracil, *J. A. M. A.* 122: 78 (May 8) 1943.

3. Kahn, J., and Stock, R. P.: Fatal Agranulocytosis Resulting from Thiouracil, *J. A. M. A.* 126: 358 (Oct. 7) 1944.

4. Palmer, V.: Hyperthyroidism and Thiouracil, *Bull. School of Med., Univ. of Maryland* 28: 125 (Jan.) 1944.

5. Williams, R. H.: The Use of Thiouracil in the Treatment of Thyrotoxicosis, *M. Clin. North America* 28: 1043 (Sept.) 1944.

6. Williams, R. H., and Clute, H. M.: Thiouracil in the Treatment of Thyrotoxicosis: A Report of 72 Cases, *New England J. Med.* 230: (37) (June 1) 1944.

7. Bartells, E. C.: Thiouracil in Severe Hyperthyroidism, *J. A. M. A.* 125: 24 (May 6) 1944.

murmur at the apex. Auricular fibrillation without pulse deficit was present. Scattered rhonchi were heard throughout the lungs. The remainder of the physical examination was entirely negative. The diagnosis of hyperthyroidism was made.

The patient weighed 97 pounds (44 Kg.) on admission. He was given a fifteen day trial of iodine without response. Diarrhea and weakness continued. Administration of thiouracil was then begun. The patient received 0.2 Gm. of the drug four times a day for the first three days. The dose was then increased to 0.3 Gm. four times a day. The latter dosage was maintained throughout the patient's hospital stay. During the first five days of treatment the white blood cell count fell from 9,500 with 60 per cent polymorphonuclear leukocytes to 5,150 with 65 per cent polymorphonuclear leukocytes. During the next thirteen week period the patient gained 31 pounds (14 Kg.). All gastrointestinal symptoms had disappeared. His basal metabolic rate dropped from plus 40 to plus 2. The pulse rate dropped from an average of 100 to an average of 80. The tremor disappeared. His weight of 97 pounds on admission rose to 124 pounds (56 Kg.). The white blood cell count during this period ranged from 5,100 to 7,400. He was then placed on a maintenance dose of 0.9 Gm. daily of thiouracil and discharged to the outpatient department on the one hundred and thirty-first hospital day.

He was followed in the clinic from May 29 until July 3, 1944. During this time he remained asymptomatic and maintained his weight at 124 pounds. In general his health had been excellent and he was completely free from infection. He was kept on 0.9 Gm. of thiouracil once a day for twenty-nine days. Then the dosage was cut to 0.6 Gm. daily for seven days. On July 3 a white blood cell count was taken and was found to be 1,250, with 37 per cent polymorphonuclear leukocytes. He was immediately admitted to the hospital.

The patient felt well for the first two days. His temperature then began to rise and on the fourth day was elevated to 105 F. On the fifth day he was noted to have an inflamed pharynx. The temperature continued to be elevated and his pharyngitis progressed in severity. He died on the seventh hospital day. During this period the white blood cell count continued to fall and was 450 without any granulocytic cells on the day of death. Pentnucleotide given intramuscularly and blood transfusions were of no avail. He had received 113.6 Gm. in one hundred and twenty-eight days.

It should be noted that following the transfusion his temperature became elevated. Penicillin was administered during the last twenty-four hours without any effect on the temperature or course.

Postmortem Examination (performed forty-eight hours after death).—The pharynx was intensely congested and reddened. The thyroid had a normally situated left lobe which was slightly smaller than normal. The isthmus was unchanged. The right lobe was found to be entirely within the apex of the right chest and compressed the apex of the lung downward. It was five times the usual size and coarsely nodular, with the nodules ranging in size from 2 to 4 cm. in diameter. Some of these nodules contained calcium and bone formation, while others were hemorrhagic and necrotic. Large follicles of colloid were visible on section. The trachea was not compressed. The left lobe had a smooth surface. On section it presented a fine, honey-combed appearance. The heart weighed 400 Gm., and all its chambers were dilated. The valves were unchanged, and the ventricular walls were not hypertrophied. The coronary arteries contained a few atheromatous plaques. The lungs showed patchy areas of hemorrhagic consolidation, particularly in the lower lobes. The bone marrow (vertebral and ribs) appeared unchanged. There were no other gross abnormalities.

Microscopic Examination.—The right lobe of the thyroid contained numerous adenomas. For the most part the follicles were filled with colloid; however, the lining of these follicles consisted of low cuboidal cells. An occasional focus was devoid of colloid, and the lining cells appeared to be somewhat more hyperplastic. There was considerable fibrosis present. The left lobe showed nothing unusual. The bone marrow, both with hematoxylin and giemsa preparations, showed moderate hypoplasia of the granulocytic cells. There was definite decrease in the percentage of mature polymorphonuclear leukocytes. The kidneys contained hemoglobin casts in the collecting tubules. In the

lungs were patchy areas in which the alveoli were filled with red blood cells and an occasional lymphocyte. In the center of a few of these areas necrosis was present along with numerous bacterial colonies. The anatomic diagnosis was adenomas of the thyroid, agranulocytosis, hemoglobin nephrosis, dilatation of the heart and hemorrhagic lobular pneumonia.

COMMENT

The dosage given in this case is somewhat higher than that which is generally used at present. It was problematic, however, whether the total dosage was related to the onset of the agranulocytosis. It is thought that this complication occurs on the basis of developing sensitivity or idiosyncrasy rather than on the cumulative effect of the drug. In relation to this, Williams,⁸ in an analysis of 2 cases treated with thiouracil, in 1 of which death occurred of cerebral hemorrhage and in the other of bronchopneumonia, found that the highest concentration of the drug was in the adrenals, pituitary and bone marrow.

Another finding of interest in this case was the hemoglobin casts in the renal tubules. The patient, however, had several transfusions with rather characteristic transfusion reactions, so that this anatomic change may be accounted for entirely on this basis. However, renal complications with the use of thiouracil have been reported. Palmer⁴ reported hematuria without the presence of casts in 1 case, while Williams⁶ reported 6 cases in which edema and albuminuria developed. These signs cleared after cessation of therapy. Since this drug is closely related to the sulfonamides and since it is soluble at a *pH* of 8.5, it has been suggested that if the renal complications tend to become severe or increase it might be advisable to administer sodium bicarbonate along with the thiouracil. Other toxic manifestations, such as skin eruptions or jaundice, were not noted in this case.

400 East Twenty-Ninth Street.

BILATERAL TEMPORAL ARTERITIS WITH COMPLETE LOSS OF VISION

EDWARD W. SHANNON, M.D., CLEVELAND, AND
JAMES SOLOMON, M.D., BOSTON

Since the original paper of Horton, Magath and Brown¹ many cases of temporal arteritis have been reported, and this syndrome is now recognized as a definite clinical entity.

Temporal arteritis is a self-limited, nonfatal disease characterized by headaches more or less constant and frequently worse at night, general malaise, lassitude, weakness, night sweats and low grade fever, and frequently there is pain in the jaws which makes chewing difficult. The temperature ranges from 98 to 103 F., and the blood may show a mild leukocytosis and an anemia. Mental symptoms are not common, but in a case reported by Sprague² there was definite dulling of the intellect. Most of these patients have rather severe constitutional symptoms and appear much sicker than the objective signs would indicate. In the typical case, a few weeks after the onset of the headache, the temporal arteries become tortuous, enlarged and very prominent. Frequently nodules appear along the arteries, which are tender. As the periarteritis progresses, the arteries become thrombosed and all pulsation stops. The occipital arteries are sometimes involved.³ The fact that the muscle and joint symptoms as well as the constitutional symptoms are so extensive suggests that arteries other than those of the head are involved.⁴

All of the case reports thus far published have been of persons over 50 years of age. There is no significant predilection for either sex.

8. Williams, R. H., quoted by Palmer, V.: *Bull. School of Med., Univ. of Maryland* 28: 125 (Jan.) 1944.

Dr. Shannon was resident in neurosurgery and Dr. Solomon resident in neurology, Massachusetts General Hospital.

1. Horton, R. T.; Magath, T. B., and Brown, G. E.: An Undescribed Form of Arteritis of the Temporal Vessels, *Proc. Staff Meet., Mayo Clin.* 7: 700-701, 1932.

2. Sprague, P. H., and MacKenzie, W. C.: A Case of Temporal Arteritis, *Canad. M. A. J.* 43: 562-564, 1940.

3. Bowers, J. M.: Arteritis of the Temporal Vessels, *Arch. Int. Med.* 66: 384-392 (Aug.) 1940.

4. Duck, G. F., and Freeman, G.: Temporal Arteritis, *J. A. M. A.* 114: 645-647 (Feb. 24) 1940.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - CHICAGO 10, ILL.

Cable Address - : - : "Medic, Chicago"

Subscription price - - - - Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, MARCH 17, 1945

COORDINATED RESEARCH FOR THE TESTING OF ANTIMALARIAL DRUGS

To the list of volunteers who have aided the advancement of medical science may now be added prisoners in three American penitentiaries. Civilian investigators, aided by grants of funds from the Committee on Medical Research of the Office of Scientific Research and Development, and members of the Army, Navy and Public Health Service have participated in the program. Since March 1944 over 100 prisoner volunteers in a United States penitentiary have been exposed to relapsing vivax malaria in final tests of potential antimalarial drugs prior to their use in the armed forces. Over 100 more volunteers in two other prisons have taken large doses of new drugs for long periods of time to determine whether or not the drugs may safely be used in the prevention and treatment of malaria. The three institutions in which the cooperation of the prisoners has made possible the continuing success of this most important link in the chain of studies to discover a medicinal agent more effective than any now in use against malaria are the United States Penitentiary at Atlanta, Ga., the Illinois State Penitentiary, Stateville, Joliet, and the New Jersey Reformatory, Rahway. In all three penitentiaries the officials and the custodial staffs have cooperated fully.

Quinine and atabrine are efficacious in suppressing the clinical attacks of vivax (benign tertian) malaria, but neither is capable of eradicating the disease completely. Early in 1941 an integrated and comprehensive program of research was organized by the National Research Council and supported by the federal government through the Committee on Medical Research of the Office of Scientific Research and Development. Later the entire program was integrated under the Board for the Coordination of Malarial Studies, a joint body composed of representatives from the Army, Navy, Public Health Service, Office of Scientific Research and

Development and the National Research Council. Acting under the board are four subcommittees—the Panel on Synthesis, the Panel on Biochemistry, the Panel on Pharmacology and the Panel on Clinical Testing—which direct the research on malaria and on the development of new antimalarials. The Panel on Biochemistry comprises a group of investigators who are studying the fundamental relationships between the parasite and the cells of the host which it infects. It is concerned also with the mechanism of action of antimalarials on the various developmental stages of the parasite. The Panel on Synthesis supervises the work of chemist-contractors and cooperating pharmaceutical companies engaged in the synthesis of chemicals which are to be tested for antimalarial action. When a drug appears promising, the entire group to which it belongs is fully studied, all chemically related compounds being tested in several avian species. The Panel on Pharmacology supervises the testing of drugs for antimalarial action in animals. These drugs are first tested on chickens, ducks, canaries and turkeys artificially inoculated with their respective species of malaria parasites. Drugs which show promise in these lower animals are then tested, when practicable, on monkeys artificially infected with the species to which these animals are susceptible. Although drugs found to exert antimalarial activity in animals do not necessarily show the same degree of activity in human beings, the vastness of the program necessitates this type of screening in lower animals. This panel also directs studies of acute and chronic toxicity in animals. The Panel on Clinical Testing receives the drugs which have shown promise against malaria in lower animals and monkeys and determines their effect in man.

Chemists have been brought together to synthesize the potential antimalarials: parasitologists to test these compounds against the malarias of birds and monkeys, pharmacologists to determine the relative safety of the effective drugs in higher animals and man, biochemists to develop methods for measuring the amounts of a drug dissolved in the blood and deposited in the tissues of the body and to study the chemical relationship between parasite and host, and finally physicians to put the drugs to critical tests against malaria in man.

The first trial of a promising drug in man is usually carried out against malaria used for the treatment of syphilis of the central nervous system. The malaria is given to the syphilitic by the transfusion of blood containing the parasites, not by mosquito bites, and is treated with the new drug at small, relatively safe doses. Malaria induced by blood transfusion does not relapse; therefore, if a new drug is successful in these preliminary trials, it must be tested against malaria induced by mosquito bite. In order to accomplish this under controlled conditions which will establish beyond question the

effectiveness of the new compound, the drug is tried on normal men willing to contract malaria through the bites of infected mosquitoes and willing to endure the risks associated with taking large amounts of relatively unknown and possibly dangerous drugs.

The three penitentiaries have supplied the testing ground and the human volunteers for such definitive clinical tests of the safety of new drugs and of their effectiveness against malaria acquired by mosquito bite. The immediate direction and supervision of this testing program has been the task of a field laboratory of the National Institute of Health of the U. S. Public Health Service at Atlanta, of the Department of Medicine of the University of Chicago at Stateville, and of the Departments of Medicine and Pharmacology of New York University Medical School at Rahway. All three projects are being carried out under contracts with the Office of Scientific Research and Development.

A prison is an ideal proving ground. Here, in one circumscribed area, live hundreds of men, eating the same meals, working under the same schedules and living the same regimented unvarying existence. To these controlled conditions the medical scientist adds the further safeguards needed to assure the drug a fair and impartial evaluation in its crucial laboratory test. At Atlanta, out of 325 volunteers over 100 have already been infected with malaria and have taken the new drugs that may mean the end of a long and arduous search; at Stateville some 400 prisoners answered the call for volunteers, of whom more than 50 have already started on courses of high doses of new drugs to determine whether or not they may be given safely over long periods; within a month another group of volunteers will receive malaria by the bite of infected mosquitoes and will also receive a new drug in maximum tolerated doses. At Rahway 60 volunteers are deliberately taking increasingly larger doses of several different compounds until the ceiling of safe administration can be established.

When the experiments were begun, the men were fully informed of the objectives of the work, the nature of the disease, the hazards and the inconveniences. A man who volunteered for the experiment was warned to expect malaria—since he surely would develop it were the drug under test not completely preventive in the dosage used. And he was flatly warned that malaria meant that he could anticipate one long siege of trouble for a year and a half or perhaps longer.

By lot, fifteen men draw for positions in the test. Ten of these will begin the drug four days before infection, five will receive enough to test for a possible effect against the earliest hidden forms of the malaria parasites and five will undergo a longer course of treatment to test for a suppressive effect against the clinical attack of malaria which may be expected to appear from six to twenty days after the mosquito bites. The

remaining 5 will not receive the drug; these are the controls and must develop malaria to prove that the mosquitoes actually were carriers of infection to the other 10. When clinical malaria has appeared, these controls are used in tests of the curative value of the drug.

The only sure test of infection is finding parasites in the blood; for this the volunteers give a drop of blood from the finger almost daily for months. Serologic tests for the diagnosis of latent malaria are under investigation and chemical tests must be run on blood samples from each man to determine the amount of the test drug circulating in his blood. For these purposes the volunteers submit to the withdrawal of as much as 50 cc. of blood daily for over a week and then at periodic intervals for a month or more. Two weeks after the infecting bites the controls are sick; perhaps a few of the men taking the drug for the short term have also been stricken with malaria. When the men are ill they are given the best possible care in a special unit of the well equipped prison hospital. When the men develop malaria they are treated promptly with large doses of one of the test drugs, and as soon as they are well they return to their jobs in the prison. Periodic observations are continued for months in order to record every instance in which the disease relapses.

Another type of experiment conducted in two of these prisons involves the study of the acute and chronic toxicity of new drugs. Groups of 15 to 30 men each are given daily doses and weekly doses for periods extending over weeks or months. During this time their symptoms are recorded, charted and plotted. They are examined frequently for any gross evidence of toxicity, and the quantity of drug in the plasma is determined frequently. Other tests to evaluate injury to the kidneys, blood, bone marrow and other tissues are instituted.

These experiments have four major functions: (1) to demonstrate the tolerance to the drug of men living under ordinary conditions of activity, (2) to determine whether any latent chronic toxic manifestations result from the prolonged administration of the drug, (3) to determine whether, when given daily or weekly, the drug tends to accumulate in the system or whether excretion keeps pace with administration, and (4) to determine the most satisfactory dosage schedule which will afford a plasma level adequate to protect against vivax malaria.

This research is a demonstration of the manner in which certain projects in the field of medical research are best conducted under governmental auspices. Already medical science has gained vastly; the reports that come from the Bush committee should do much to stimulate a permanent useful mechanism for this type of coordinated research.

PENICILLIN TREATMENT OF VIRUS DISEASES

Experimental confirmation of clinical experience¹ that penicillin is ineffective against virus diseases is reported by Parker and Diefendorf² of the Western Reserve University School of Medicine. Equine encephalomyelitis, meningopneumonitis, psittacosis, St. Louis encephalitis and two strains of vaccinia virus were tested by these investigators. Two methods were used to determine viruscidal effects. By the first method the virus was cultivated in Rivers-Li culture medium³ consisting of a suspension of chick embryonic cells in Tyrode solution, with or without penicillin. After five days' incubation the penicillin containing cultures and the non-penicillin controls were titrated for virus. By the second method, both virus and penicillin were injected into the yolk sac of intact chick embryos or placed on the chorioallantoic membranes. Development of lesions on the membrane or death of the embryo was taken as a criterion of virus growth.

The results of experiments in which viruses were cultivated in Rivers-Li medium showed that the rates of growth in the presence of 10 Oxford units of penicillin per cubic centimeter within the limits of the experimental error are identical with the rates in the nonpenicillin controls. Similar negative results were obtained in many of the intact chick embryos. In one series of experiments 14 day embryos were inoculated on the chorioallantois with a quantity of vaccinia virus sufficient to give 15 to 50 lesions on each membrane. In the therapeutic tests 500 Oxford units of penicillin was injected into each egg either twenty-four hours before the inoculation or at the time of the inoculation. Differences could not be distinguished between the control and the treated embryos either in the size or number of lesions when the membranes were examined two days later. Negative results were obtained also with St. Louis encephalitis and with equine encephalomyelitis virus.

Distinct therapeutic effects were obtained with meningopneumonitis virus and slight therapeutic results with psittacosis. Of 20 control embryos injected into the yolk sac with meningopneumonitis virus 19 died by the end of the tenth day. In 30 similarly injected embryos treated with 400 Oxford units of penicillin only 6 died by the fourteenth day. Fifty Oxford units gave negative results. With psittacosis virus the 90 per cent control mortality was reduced to 80 per cent by one or more yolk sac injections of 500 to 600 Oxford units.

These positive results are of little clinical interest, since maintenance of a comparable blood concentration

of penicillin in man would require the daily injection of several million Oxford units of penicillin. On the whole, Parker's experiments confirm the current clinical belief that penicillin is without practical therapeutic value in virus infections.

THE HILL-BURTON HOSPITAL CONSTRUCTION BILL

Elsewhere in this issue appear the statements made by two representatives of the American Medical Association before a hearing of the Senate Committee on Education and Labor on the so-called Hill-Burton Hospital Construction Bill. The Board of Trustees of the American Medical Association at a recent meeting indicated that the general policies of this measure are within the platform of the American Medical Association and expressed the opinion that the bill should receive the support of the medical profession.

As was pointed out by Dr. R. L. Sensenich, this measure embraces the principle that the need for an institution is to be established by adequate evidence before funds are allotted for its construction. The Hill-Burton measure recognizes that conditions vary as regards health in different parts of the United States. Obviously the success of this measure, if it becomes effective, will depend largely on the constitution of the Federal Advisory Council, which will have more authority than has generally been granted to such advisory groups in relation to federal agencies. Several suggestions were made by Dr. Sensenich tending toward strengthening of the responsibilities of this council.

As Dr. Sensenich pointed out also the term "public health center" has never been clearly defined. Such an agency might under present definitions undertake a number of functions quite outside the scope of either preventive medicine or the extension of medical service where needed. In certain areas of this country a public health center might be required to undertake procedures which would not be considered either desirable or necessary in other areas.

In his testimony on the Hill-Burton measure Dr. Victor Johnson supplemented the statement of Dr. Sensenich. He emphasized the desirability that a Federal Advisory Council, dealing with the construction of hospitals and health centers, include men of experience in the fields concerned; because of such experience they could command the full support of hospital administrators, physicians and the public.

Dr. Johnson took advantage of the occasion to emphasize again the great importance of legislation which would guarantee for the postwar period adequate numbers of premedical and medical students,

A medical service is no better than the quality of the physicians who render the service. The mere construction of facilities is not in itself any guaranty to an area that it will have sufficient medical care of high

1. Indications, Contraindications, Mode of Administration and Dosage for Penicillin, War Production Board (Mimeograph edition); Dec. 1, 1944.
2. Parker, R. F., and Diefendorf, H. W.: *Proc. Soc. Exper. Biol. & Med.* 57: 351 (Dec.) 1944.
3. Li, C. P., and Rivers, T. M.: *J. Exper. Med.* 52: 465 (Oct.) 1930.

quality. Complete effectiveness in achieving the objective that the proponents of the Hill-Burton measure desire to achieve can come only when construction of facilities is dependent on evidence of ability to maintain the institution and to provide competent personnel.

Current Comment

PENICILLIN AVAILABLE THROUGH NORMAL COMMERCIAL CHANNELS

Effective March 15, producers and distributors of penicillin may sell this drug through normal commercial channels. The material will be released in vials containing 100,000 units of sodium penicillin for human parenteral medication. Since May 1944 a limited amount of penicillin has been available for civilian use through the Penicillin Distribution unit in Chicago, which was established by the War Production Board. Hospitals will not be required to place orders through the Penicillin Distribution office, as has been done since last May. However, the office will remain open for a while to meet emergency needs. If a hospital is unable to get penicillin from a distributor it may order from the WPB Chicago Penicillin Distribution office. Distributors have been authorized to sell 1,280,000 packages from March 15 to March 31. An additional quantity of approximately 1,500,000 vials will be made available for distribution in April. Similar quantities are expected to be released each month. Penicillin is not yet in sufficient supply to permit its use in manufactured pharmaceutical products such as pills, lozenges, ointments and other miscellaneous dosage forms. The development and control of penicillin present one of the most important contributions to modern therapy. Cooperation throughout the entire project has been excellent, and all participating members have reason to be proud of their record.

EXPERIMENTAL TRANSMISSION OF RHEUMATIC FEVER

The difficulty in experimental transmission of rheumatic fever has always proved a stumbling block to investigations on that disease. Several years ago Birkhaug¹ reported the self inoculation of a filtrate obtained from a strain of nonhemolytic streptococci isolated repeatedly from a patient with rheumatic fever. About twenty-four hours after the injection acute multiple arthritis developed with fever, pain, swelling and redness. This condition subsided in a few days. Birkhaug's description of the course of events was so striking as to make repetition of the experiment on a larger scale highly desirable. Now Copeman² reports the results of some experiments on the transmission of rheumatic fever to a group of adult volunteers. This

experiment, like that of Birkhaug, was on a highly restricted basis. It consisted in injecting the blood of a patient suffering with typical rheumatic fever into 5 volunteers. The blood of those who showed any reaction to the initial injection was then taken and injected into a further group of volunteers. Only in the fourth transfer or "generation" of volunteers was there failure to observe reaction of any sort. Of the first group of 5 volunteers receiving blood from a patient with typical rheumatic fever 2 developed mild attacks of rheumatic fever after twenty-four hours. Pain in the shoulder muscles without fever developed three days later in a third volunteer. The blood from the first two volunteers who developed symptoms was pooled on the third day and passed on, producing what appeared to be an attack of fibrositis with fever on the second day in 1 of 4 recipients. The blood of the more severely affected of the first two was again transferred on the seventh day of illness to 4 other volunteers. One of these developed generalized pain (which Copeman calls fibrositis), which six weeks later showed signs of becoming chronic. Finally, the blood of this patient was transferred to 4 recipients on the seventh day after he had himself received a blood inoculation. One of the latter developed mild fever and transitory generalized pain followed in five weeks by a faint apical systolic murmur. Blood taken from this patient on the fifth day, however, did not produce any effect on 4 recipients. Although this group is small and inadequately controlled, as Copeman points out, the results are sufficiently suggestive to warrant extensive and controlled repetition and further investigation. For this purpose monkeys and more particularly human volunteers, who may be available in larger number now than ever before, could well be employed.

ANTEPARTUM PENICILLIN THERAPY

Transmission of penicillin from mother to unborn child through the placental barrier is reported by Greene and Hobby¹ of King's County Hospital, Brooklyn. Four normal patients were tested while in active labor, delivery being expected within two hours. From 20,000 to 100,000 Oxford units of penicillin was injected intravenously into each patient. Samples of maternal blood were taken at the time of delivery, with a sample of placental cord blood as soon as the baby was separated from the placenta. The serum from each blood sample was titrated for penicillin, hemolytic streptococci being used as the test organism. At the time of delivery (thirty minutes to two hours after injection) the amount of penicillin in the maternal blood varied from 0.01 to 0.19 Oxford unit per cubic centimeter, with an average of 0.084 Oxford unit. The average titer of the cord blood was 0.034 Oxford unit, or 40 per cent. of that in the maternal circulation. Apparently, then, penicillin passes through the human placenta in sufficient amounts to raise the penicillin titer of the fetal blood stream well above the bacteriostatic level. Practical applications of the implied antepartum penicillin therapy have not yet been suggested.

1. Birkhaug, K. E.: Rheumatic Fever: Allergic Reactions with a Toxin-Producing Strain of Non-Methemoglobin-Forming Streptococcus Isolated from Rheumatic Fever, *J. Infect. Dis.* 43: 280 (Oct.) 1928.
2. Copeman, W. S. C.: Experimental Transmission of Rheumatic Fever, *Ann. Rheumatic Dis.* 4: 37 (Dec.) 1944.

1. Greene, H. J., and Hobby, G. L.: *Proc. Soc. Exper. Biol. & Med.* 57: 282 (Nov.) 1944.

MEDICINE AND THE WAR

ARMY

ANNOUNCEMENT OF QUALIFYING TEST FOR ASTRP

The Sixth Service Command, Chicago, recently announced a nationwide qualifying test for the selection of candidates for the Army Specialized Training Reserve Program which will be conducted on April 12 at all high schools and colleges to which eligible applicants submit requests for the examination. The examination will be administered by a civilian agency which will be responsible for distribution of tests, scoring and reporting results. Complete information will be furnished school officials about March 1. The test will be open to young men who were born after Sept. 30, 1927 and before Sept. 1, 1928 and who will have graduated from high school prior to date of their enrolment in the ASTRP Program. Those who qualify on this test will be eligible for enrolment in the ASTRP and assignment to selected colleges and universities for terms beginning in the months of July, August and September 1945 only.

To establish eligibility for enrolment in the ASTRP, those who pass the qualifying test are required to enlist in the Enlisted Reserve Corps, but they are not called to active duty until fourteen days after the completion of the term in which they become 18 years of age. Depending on their age at date of entrance into the program, they are eligible for two, three or four twelve-week terms. Trainees accepted for the ASTRP are furnished transportation from their homes to the designated educational institutions, housing, messing, tuition, books, medical care and complete uniforms while in attendance at college. The program may be considered as the equivalent of a government scholarship which effects a saving to parents of about \$1,000 in costs of education for the average young man who is eligible for college training for three twelve-week terms.

The course of study in the ASTRP includes mathematics, physics, chemistry, English and history. Those who have completed one or more terms of college will be placed in terms of the course at appropriate levels. A progressive course of physical education is conducted under qualified instructors for six hours a week and the trainees receive five hours a week of basic military training, which is a decided advantage to them when they subsequently are called to active duty and sent to army camps for basic training.

It is desired that the widest publicity be given this program to insure that all school officials, eligible young men and their parents are fully informed of the educational opportunity available to those who can pass the qualifying test on April 12. Applications to take the test should be addressed to high school principals or college registrars and should be submitted as early as practicable. Applications must reach school officials not later than March 31.

REFRESHER COURSES FOR SOME MEDICAL OFFICERS

Major Gen. George F. Lull, Deputy Surgeon General, U. S. Army, recently announced that officers of the Army Medical Department who have been occupied with administrative and other nonprofessional work and who are being assigned duty utilizing their professional skills will have the opportunity of taking courses in their specialties under a new training program just inaugurated. The training will be voluntary and will be open to those members of the Medical Corps who, because of assignment to command, administrative or semiprofessional positions, have not been engaged in the professional side of medical service during the past twelve months or more and whose future military assignments will require professional activity. Every Medical Corps officer of the Army Service Forces returning from overseas assignment will be informed at redistribution stations of this new training program and will

be asked to state whether he desires to avail himself of the opportunity. These refresher courses will be given at general hospitals and certain regional hospitals selected by the Surgeon General. Requests for this training will be submitted through channels to the Surgeon General, who will make assignments to hospitals. Officers selected for these courses will go on temporary duty for a period of not more than twelve weeks.

SANITATION COURSE

Twenty-five Hospital Corps officers were selected and ordered to report to the medical officer in command, Medical Research Unit No. 1, Berkeley, Calif., January 1, for temporary duty under instruction in practical sanitation at the University of California for a period of three months. The first two months of the course will be devoted to intensive instruction in the various phases of sanitation. The last month will be utilized for practical field training in sanitation, and on successful completion of the course the officers will be ordered to various naval activities for duty as sanitary inspectors. A second class for this course of instruction will be convened at the University of California, April 1.

AUTHORIZED BADGE FOR MEDICAL PERSONNEL IN COMBAT

A special badge will be awarded to army medical personnel who serve with combat units under fire. The badge is of silver metal, elliptic, with the Medical Department's insignie, the caduceus, and the Geneva Cross superimposed on a litter surrounded by a wreath of oak leaves, and is to be worn on the left breast above decorations and service ribbons. The regimental commander is authorized to make the award for "satisfactory performance of duty under actual combat conditions."

STATEMENT CONCERNING DISCHARGES HELD ERRONEOUS

Secretary of War Henry L. Stimson recently made it known that the statement attributed to the head of the Veterans Administration that 250,000 soldiers a month will be discharged immediately after the war ends in Europe is both unauthorized and without foundation. The basic elements in the War Department demobilization plan were made public last September 6 and remain unchanged. When hostilities cease in Europe the War Department intends to marshal against the Japanese every soldier and every item of equipment that can be used effectively to speed our final victory.

PRISONER OF WAR

Major Ralph W. Hubbard, formerly of Oklahoma City, who was taken prisoner by the Japanese at the fall of Bataan about two and a half years ago, is believed to be in Cabanatuan, Philippines. Recently a message intercepted in a Japanese propaganda broadcast and forwarded by the United States provost marshal indicates that he has been receiving letters, packages and pictures from his wife and other relatives. Dr. Hubbard graduated from the University of Oklahoma School of Medicine, Oklahoma City, in 1932 and entered the service Sept. 27, 1940.

TREAT LUZON INTERNEES

Major Nelson Chestnut, formerly of Springfield, Ill., and now commander of the 607th medical clearing company, stated that there were 145 litter cases among the 2,121 liberated persons from the Los Banos internment camp.

ARMY MEDICAL OFFICERS RESCUED ON LUZON

Twenty-one officers of the Army Medical Department, including thirteen doctors, three medical administrative officers, four dentists and a veterinary officer, were named in the first list of prisoners freed from Camp Cabanatuan on Luzon. The list of those freed from Santo Tomas University, Manila, included sixty-six nurses, a physical therapist and a hospital dietitian. The full list of freed prisoners has not yet been officially released and may contain the names of other medical corps officers in addition to the following:

Col. James W. Duckworth, Gosport, Ind.
Lieut. Col. John Edward Kallus, Caldwell, Texas
Major Ralph Waldo Hubbard, Oklahoma City
Major Emil Patrick Reed, Brownsville, Texas
Major Stephen C. Sitter, Milwaukee
Capt. Ralph Emerson Hibbs, Oskaloosa, Iowa
Capt. Charles Joseph Katz, Oak Park, Ill.
Capt. Charles Leasum, Sturgeon Bay, Wis.
Capt. Robert B. Lewis, Cape Elizabeth, Maine
Capt. Robert Kirkwood Whately, Palo Alto, Calif.
1st Lieut. Harry Merrill Brown, Cicero, Ind.
1st Lieut. Charles Francis Lewis Jr., Oakland, Calif.
1st Lieut. Merle McNeill Musselman, Ann Arbor, Mich.

CHINESE FLIGHT SURGEON HERE

Col. Joseph Shiang-min Lee, flight surgeon, Chinese army, recently visited the Office of the Surgeon General to confer with officers of the training division. Colonel Lee, who is a member of the faculty of the Chinese Army Medical College, Anshun, China, received his military medical training in this country, graduating as a surgeon from the School of Aviation Medicine, Randolph Field, Texas, in 1933 and graduating from

the Medical Field Service School, Carlisle Barracks, Pennsylvania, in 1934. He is now visiting medical department training installations to observe the recent advances which have been made in the military and professional training program of the Medical Department.

ORGANIZING NURSE RECRUITMENT

Major Edith Aynes, chief of the Army Nurse Corps Branch of the Technical Information Division, Office of the Surgeon General, and Miss Evelyn Blewitt, civilian consultant to the Surgeon General on army nurse public relations, have returned to Washington after visiting Dallas, Texas, Los Angeles, San Francisco and Portland, Ore. There they conferred with advertising agencies, army nurse recruiting committees, army hospital superintendents and members of the Procurement and Assignment boards participating in the intensified drive for army nurses. A similar trip to the Middle West is planned for the near future.

ARMY MEDICAL DEPARTMENT PERSONNEL REPATRIATED

The War Department recently announced that seventy-seven officers and enlisted men of the Army Medical Department who have been released by Germany will arrive at Charleston, S. C., aboard a hospital ship some time in March. They are the first "protected personnel" under the Geneva convention to be repatriated in this war. The repatriates, whose kin have been notified of their expected arrival, were reported in good health when the hospital ship left Marseille, France. None will require hospital treatment, the War Department said.

MISCELLANEOUS

SURPLUS MEDICAL AND SURGICAL EQUIPMENT FOR CIVILIAN USE

The U. S. Treasury's Office of Surplus Property recently released surplus medical and surgical equipment and supplies by the armed forces for civilian use. Much of the material offered for sale was manufactured for use in the first world war and is in "new" condition, although shelf worn. Each month the regional offices of surplus property inform tax supported institutions and established firms on their mailing lists of medical and surgical properties available for purchase, through the national catalogue "Surplus Reporter." The catalogue, released on March 3, the fourth issue in the series, lists a wide variety of diagnostic and surgical instruments, laboratory equipment, drugs, supplies and treatment equipment of the type used in surgery, examination and treatment of eye, nose and throat, skin, brain and bone. Among the 500 items offered at this time are small 10 inch plaster of paris shears, hemostatic forceps, 6 inch uterine needles (one-half circle with cutting edge), over 5,000 bistouries, a large quantity of analytic filter paper (not acid washed), 250 mm. and of medium speed, over 4,000 rubber surgical operating cushions and a quantity of medical kits. B. Many of the instruments and supplies are displayed in the "sample rooms" maintained at the regional offices of surplus property, where representatives of the Treasury, selected for their professional knowledge, are on duty to assist potential purchasers. A list of the regional offices of surplus property follows:

Region I—Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont. Mr. J. D. Tompkins, regional director, Procurement Division, U. S. Treasury Department, Park Square Building, Boston 16.

Region II—Pennsylvania, New Jersey, New York. Mr. Frank L. Seymour, regional director, Procurement Division, U. S. Treasury Department, 50 Church Street, New York 7.

Region III—Washington, D. C., Delaware, Maryland, North Carolina, Virginia. Mr. M. P. Shlesinger, regional director, Procurement Division, U. S. Treasury Department, 499 Pennsylvania Avenue N. W., Washington 25, D. C.

Region IV—Indiana, Kentucky, Ohio, West Virginia. Mr. R. D. Schell, regional director, Procurement Division, U. S. Treasury Department, Commercial Arts Building, 704 Race Street, Cincinnati 2.

Region V—Illinois, Michigan, Minnesota, North Dakota, South Dakota, Wisconsin. Mr. F. A. Mapes, regional director, Procurement Division, U. S. Treasury Department, 209 South La Salle Street, Chicago 4.

Region VI—Alabama, Florida, Georgia, Mississippi, South Carolina, Tennessee. Mr. H. E. Harmon, regional director, Procurement Division, U. S. Treasury Department, Belle Isle Building, Atlanta 3, Ga.

Region VII—Arkansas, Louisiana, Oklahoma, Texas. Mr. Hamilton Morton, regional director, Procurement Division, U. S. Treasury Department, 609 Neil P. Anderson Building, Fort Worth 2, Texas.

Region VIII—Iowa, Kansas, Missouri, Nebraska. Mr. Thomas C. Stephens, regional director, Procurement Division, U. S. Treasury Department, 2605 Walnut Street, Kansas City 8, Mo.

Region IX—Colorado, New Mexico, Utah, Wyoming. Mr. Alden W. Pool, regional director, Procurement Division, U. S. Treasury Department, Seventh Floor, Exchange Building, 1030 Fifteenth Street, Denver 2.

Region X—Arizona, California, Nevada. Mr. John F. Hough, regional director, Procurement Division, U. S. Treasury Department, 30 Van Ness Avenue, San Francisco 2.

Region XI—Idaho, Oregon, Montana, Washington. Mr. Orrin C. Braden, regional director, Procurement Division, U. S. Treasury Department, 2005 Fifth Avenue, Seattle 1.

Region XII—Puerto Rico. Mr. J. T. Gilmer, regional director, Building F, Munoz Rivera Park, San Juan, Puerto Rico.

Honolulu, Hawaii. Mr. Hugh C. Teanent, Procurement Division representative, U. S. Treasury Department, Iolani Palace, Honolulu 2, Hawaii, T. H.

WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

Michigan

Percy Jones and Convalescent Hospital, Battle Creek: Laboratory Technics in Differentiating Medical and Surgical Approaches in Regurgitational Jaundice, Dr. E. L. Tuohy, March 19; Anesthesia, Dr. J. S. Lundy, March 26.

West Virginia

The Recognition of Nutritional Deficiency Diseases, Dr. Richard W. Vilter, March 26.

ORGANIZATION SECTION

THE HILL-BURTON HOSPITAL CONSTRUCTION BILL

Summary of statements made February 28 to the Senate Committee on Education and Labor by Dr. R. L. Sensenich, member of the Board of Trustees of the American Medical Association, and Dr. Victor Johnson, Secretary of the Council on Medical Education and Hospitals of the American Medical Association, on Senate Bill 191 (abstracted in THE JOURNAL, January 27, p. 231).

Dr. Sensenich's Statement

On behalf of the American Medical Association, I wish to express my appreciation for this opportunity to appear before you to present the views of the Board of Trustees of the American Medical Association on Senate Bill S. 191. The facilities of the American Medical Association are at your disposal in the efforts to obtain a solution of the problem of providing adequate hospital facilities of a high quality for all the people of this country.

The Board of Trustees of the American Medical Association has given careful consideration to the provisions of the "Hospital Construction Act" in the light of the Platform of the Association. The Board, at a recent meeting, took action to the effect that so far as its general policies are concerned the Hill-Burton bill is within the platform of the American Medical Association; that while there are certain modifications that would better define some of its provisions and render the bill more effective, nevertheless it is the feeling of the Board that the bill in general should receive the support of the American Medical Association.

If I may have your permission I should like to distribute a copy of the Platform of the American Medical Association to each member of the Committee and also to include a copy in the record of these hearings. The authors of the bill, and their advisers, are to be congratulated on the basic soundness of their approach.

The Platform of the American Medical Association with regard to the extension of medical care includes the recommendations that funds allotted by Congress "for the prevention of disease, the promotion of health and the care of the sick" should be based on "local determination of needs and local control of administration."

In this bill there has been full recognition of the fact that conditions relating to health and hospital problems vary tremendously in the different parts of the country. A hospital construction plan for a populous, highly urbanized Eastern state may be utterly unsuited to a sparsely populated state of the Rocky Mountain area. Neither of these may be adaptable to a prosperous corn-hog farm state or an economically ill favored tenant farmer state. The Hill-Burton bill appears to provide a maximum of flexible adaptation to local conditions, with a minimum of undesirable uniformity and regimentation.

Should this bill be enacted into law, its successful operation will depend in large measure on the constitution, competence, wisdom and prerogatives of the Federal Advisory Council. The extent to which there is general approval and support of the objectives of the bill will be determined by these appointments. It might be desirable to consider a rewording of the provisions for these appointments, so that lines 24 and 25 on page 14, and lines 1 and 2 on page 15 might read:

eight appointed members shall be persons who are representative outstanding authorities in fields pertaining to hospitals, public health and medical care activities, and a majority of them shall be representative authorities in matters relating to the operation of hospitals. The first term of four of the . . .

The role of the Federal Advisory Council and its relationship to the administrative activities of the Surgeon General of the Public Health Service are not entirely clear. The provisions of the bill seem sound in the case of the standards for state surveys of hospital facilities, calling for (page 3, lines 12, 13 and 14) "standards prescribed by the Surgeon General with the approval of the Federal Advisory Council" (italics not in bill) and in the provision (page 16, lines 19, 20, 21 and 22) requiring that "all regulations and amendments thereto with respect to grants to states . . . shall be promulgated *only when recommendation [italics not in bill] of the Federal Advisory Council. . .*" Another desirable provision is that

(page 15, lines 20, 21 and 22) "upon request by three or more members [of the Federal Advisory Council] it shall be the duty of the Surgeon General to call a meeting of the Council."

On the other hand, there are certain provisions of the bill in which the prerogatives and responsibilities of the Federal Advisory Council are less clearly defined. For example, with regard to "Approval of Projects and Payments for Construction" (page 9) the Federal Advisory Council is not mentioned in the statement (lines 16, 17, 18 and 19) "The Surgeon General . . . shall determine whether or not to approve such a project." And again (page 11, lines 21, 22 and 23) it is stated that "the Surgeon General shall from time to time estimate the sum to which each state will be entitled under this section. . . ."

There are other instances elsewhere in the bill in which it is not clear whether the decisions of the Federal Advisory Council are mandatory or merely advisory and whether important decisions may be made by the Surgeon General himself. It would appear sound to vest a maximum of authority in a well selected Advisory Council which will collaborate with the Surgeon General, who in turn is the administrator of the Council's policies.

The definition of the "public health center" (page 13) might well be further clarified. Perhaps lines 6, 7 and 8 should be reworded as follows:

(d) The term "public health center" means a publicly owned facility for the provision of public health services as well as such medical care as state surveys indicate to be absent and needed, including related facilities . . .

Obviously, the exact nature of the "public health centers" cannot be sharply defined in advance, since these represent experimental projects. Presumably they will vary in constitution and function from state to state. Experimentation in the establishment of such units is highly desirable and they should be adjusted to local needs.

It is noted in the bill that while a State Advisory Council is provided under section 612 with reference to the preparation of a state plan, no State Advisory Council is provided in the selection of the specific construction to be undertaken under the state plan with the funds available. It would seem desirable to have the advice of some such body in the determination of what construction shall have priority or what modifications of the plan may be desirable as the construction program progresses.

Although maintenance or administration of hospital facilities by the government is not contemplated in the bill, attention has been called by those familiar with Public Law 137, 77th Congress, referring to schools and hospitals erected with government funds, to the content of section 203 (b) and (c) of that law.

Section 203 (c) reads as follows:

(c) No department or agency of the United States shall exercise any supervision or control over any hospital or other place for the care of the sick (which is not owned and operated by the United States) with respect to which any funds have been or may be expended under this title, nor shall any term or condition of any agreement under this title relating to, or any lease, grant, loan or contribution made under this title to, or on behalf of, any such hospital or place prescribe or affect its administration, personnel or operation.

The authors of the present bill apparently are of the opinion that this point has been adequately covered in the organization provided.

In the consideration of the bill before the committee, the question of government contribution to maintenance was discussed where the location of a facility is determined on the basis of medical needs. In each community there will be those who are unable to pay for hospital care as well as those who are able to pay. The facility is established for all the people.

However, illness differs and provisions for treatment must meet the particular needs. Tuberculosis requires special hospitals, long hospitalization and some measure of isolation. Most tuberculosis hospitals are owned and supported by state or county units of government. County tuberculosis hospitals frequently are reimbursed from state funds at a fixed amount per patient daily.

The care of the insane has long been recognized as the direct responsibility of government.

Chronic illness of other types, especially the slowly progressing illness of the aged, requires long periods of hospitalization, and beds cannot be given over for these patients in hospitals planned for the care of acute illness. No doubt this fact will lead to the eventual establishment of more special hospitals for chronic disease. Some unit of government must support the indigent in these hospitals. State and local governments may be stimulated to accept their full responsibility.

A study of the indigent group reveals a great concentration of chronic incurable disease, the crippled and the mentally inadequate. The number of others who are temporarily medically indigent is relatively small.

The community may need a general hospital that will be practically self supporting if the individual indigent is given assistance by local responsible authorities.

No single plan for financial aid in hospital maintenance would be suitable for the provision of the best medical care for each individual in such widely different categories.

This bill includes under the definition of hospitals public health centers and general, tuberculosis, mental, chronic disease and other types of hospitals and related facilities. It is sufficiently flexible to be useful in whatever portion of the field of hospital care that need is demonstrated. It may, therefore, provide special facilities for many of the varied types of the chronic disease indigent groups.

The American Medical Association is primarily interested in the best medical care for all the people. It would seem inadvisable to attach to this bill any plan for financing maintenance such as would render the bill less flexible and impair its effectiveness in providing facilities for different groups under varying local conditions.

The bill now provides the means for the development of facilities for the best hospital care for all the people on the basis of needs as determined by investigation and by careful planning to meet those needs.

The suggestions for modifying and strengthening this bill do not alter the position of general approval. This bill conforms to the Platform adopted by the House of Delegates of the American Medical Association. It is endorsed by the Board of Trustees of the Association and deserves the support of all members and organizational units of the American Medical Association. Its authors are to be commended on their scientific approach to this important problem.

The American Medical Association stands ready to be of every assistance within its power to the Committee on Education and Labor, or its subcommittee, in further problems related to the Hill-Burton bill and its objectives.

Dr. Johnson's Statement

I appreciate the privilege of appearing before you as a representative of the American Medical Association and its Council on Medical Education and Hospitals. This council has been concerned for over forty years with the maintenance of medical care of a high quality, by fostering and stimulating high standards in the education of the physician. The responsibilities of the Council include rendering the services of consultation, advice and accreditation to medical schools and to hospitals engaged in educational programs at the levels of the internship and residencies in the specialties of medicine.

In addition, the Council promotes improved care in hospitals not engaged in the teaching of medical students, interns and residents. It maintains a register, now including 6,645 hospitals, as a service and protection to hospitals and the public, since the register includes only those hospitals which have been determined to measure up to certain minimum standards of hospital and medical service.

The Council on Medical Education and Hospitals is glad to offer to this committee and to such state agencies as might be

set up under this bill all the detailed information it collects and publishes annually concerning the hospitals of this country.

Primarily, I wish to second the remarks of Dr. Sensenich, whose testimony preceded mine, and who supported the bill under discussion. My remarks are merely supplementary to his. However, I should like to stress the opinion that the composition and powers of the Federal Advisory Council are extremely important. This body should consist of men who will command the full support of hospitals, physicians and the public. I think the council should be more than advisory and that it should be clothed with considerable authority, as seems to be the intent of the bill. Such an arrangement with powers of both veto and the initiation of action by the council is entirely consistent with good and efficient administration. There are numerous examples of such plans in business, industry and the professions.

I am very much impressed, and I think I can speak also for the Council on Medical Education and Hospitals, with the scientific approach manifested in this bill. The only *a priori* assumption made in this bill is that there is a maldistribution of hospital facilities in various parts of the country, with which assumption all must agree. The manner in which this faulty distribution is to be assessed conforms to the best scientific procedures. The proposed surveys, conducted by states agencies with the assistance of all groups concerned with hospital care, should provide the information requisite for an intelligent program of hospital construction in areas deficient in hospital facilities.

The sound approach to a solution of the problems of better distribution of medical care and hospital facilities on the part of the Committee on Education and Labor is reflected not only in the provisions of this bill but in the approach to these problems by your Subcommittee on Wartime Health and Education, under the chairmanship of Senator Claude Pepper. The interim report of this committee, published in January 1945, is an admirable document, containing invaluable information for the formulation of programs for improved medical care.

Certain of the procedures suggested in this report and in the Hospital Construction Bill are practically identical and equally sound. The report (page 17) recommends that "state programs should be drawn up by state health planning commissions" and "Before federal funds could be granted, however, overall state plans and individual projects should be reviewed and approved by the United States Public Health Service to make sure that they meet certain standards of construction, operation and complete, coordinated service." Equally significant is the recommendation that "grants to both public and voluntary institutions included in the plan would be administered through a state agency."

The provision of hospital and diagnostic services occupies a key position in the more equitable distribution of medical care. The days of the horse and buggy doctor are gone forever. Good medicine can be practiced only when hospital and related diagnostic facilities are available. Physicians may choose to locate in a community providing these facilities even though his income may be less than in areas lacking them. United States Public Health Service studies have shown that in areas of equal per capita income there may be three times as many doctors if hospitals are available as there are if such necessities of modern medical practice are lacking.

Studies conducted by the American Medical Association and by the Committee on Postwar Medical Service indicate that twice as many medical officers returning to civilian practice after the war will be willing to go to areas with deficient medical service if hospital and diagnostic facilities are provided, as compared with those willing to locate in medically deficient areas without such facilities.

If it is true that physicians cannot be attracted to rural and medically deficient areas without provisions for hospital facilities, it is equally true that hospitals without physicians are worthless. I should like to take this opportunity to stress to this committee what I have stated to your subcommittee: The present policies of governmental agencies regarding the supply of medical students is such that we shall be faced with a drastic reduction in the number of physicians after the war. Today the lack of provisions for the training of doctors is such that we may anticipate that many hospitals constructed under this bill, if it is passed, will have no physicians to man them.

In 1944 Army and Navy students entering our medical schools constituted 80 per cent of the entering classes. Twenty per cent were selected from civilian sources. It was becoming increasingly difficult for admissions committees to secure even this small percentage of qualified civilians from the sources available. In the year 1945 only about 53 per cent of the entering students will be Army or Navy students, increasing to 47 per cent the numbers which must be obtained from civilian sources. In 1946 there will be no Army students, and only approximately 10 per cent of the entering freshmen will do so under the Navy auspices. This increases those to be obtained from civilian sources to 90 per cent of the entering classes. One of two consequences is inevitable. Either the students will be of far poorer quality or they will be far fewer in number. We cannot afford either alternative. It will be impossible to obtain these large numbers of students from the category of men under 17, physically disqualified men, veterans and women. At the present time there is an utterly inadequate number of qualified individuals entering premedical training. I appreciate that a number of you are concerned with this problem. Conversations have been held with Senator Pepper regarding solutions to the problem and on Monday of this week Senator Ellender introduced a bill, S. 637, which was referred to the Committee on Military Affairs. This bill would seem to provide adequately for the exigency.

I wish to reiterate my appreciation of the privilege of expressing these views and to repeat that every facility of the Council on Medical Education and Hospitals is available to this committee in its efforts to implement and improve the bill under consideration. Finally, I wish to emphasize the opinion that this hospital construction bill deserves the support of all who are concerned with the extension and improvement of medical care in this country.

Postwar Medical Service

The Joint Committee on Postwar Medical Service met in Chicago on February 10. The meeting was called to order by the Chairman, Dr. Ernest E. Irons, at 10:05 a. m. The following members of the Joint Committee were present: Dr. Irvin Abell, Dr. Arthur W. Allen, Dr. Walter L. Bierring, Dr. Frederick A. Collier, Mr. Graham L. Davis, Capt. William E. Eaton, Dr. Morris Fishbein, Dr. E. L. Henderson, Dr. Ernest E. Irons, Lieut. Col. H. C. Lueth, Dr. James M. Mason, Dr. James E. Paulin, Dr. George Morris Piersol, Brig. Gen. Fred W. Rankin, Rev. A. M. Schmitalla, S. J., Dr. H. H. Shoulders, Dr. LeRoy H. Sloan, Miss Mary Switzer and Dr. Olin West. Also present were Lieut. Col. R. D. Bickel, Lieut. Col. G. R. Gessner, Mr. J. W. Holloway Jr., Dr. Victor Johnson, Dr. Edwin P. Jordan, Col. B. R. Kirklin, Dr. Herman L. Kretschmer, Capt. Stephen J. McDonough Jr., Col. Hugo Mella, Col. F. V. Meriwether and Dr. R. L. Sensenich.

APPROVAL OF MINUTES OF DECEMBER 9, 1944 MEETING

The minutes of the meeting of the Committee held in Chicago on Dec. 9, 1944 were approved as circulated. It was moved by Dr. Abell after discussion by the Chairman that the minutes of the present meeting be circulated among the members of the Committee and a mail vote of approval taken, after which the minutes should be printed in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* in order that the profession at large, including military personnel, might be informed of the progress of the Committee's work. The motion was duly seconded and carried, and it was understood that this would be the procedure to be followed in the future.

COMMITTEE MEMBERSHIP

The Chairman announced that the Board of Trustees of the American Medical Association had not yet had opportunity to appoint any one to represent the Association as a member of the Joint Committee in the place of Dr. Alan Gregg, resigned. It was announced by the Chairman that Dr. Walter W. Palmer, a member of the Committee representing the American College of Physicians, has presented his resignation because of new and important duties recently assigned to him. The resignation of Dr. Palmer was accepted with regret. The Chairman

stated that the American College of Physicians would appoint a successor to Dr. Palmer at an early date.

A communication from Surgeon General Parran requested that Col. F. V. Meriwether represent the U. S. Public Health Service whenever it is not possible for Dr. R. C. Williams or Dr. Warren F. Draper to attend the meetings of the Committee. The request was accepted to.

The Chairman stated that it was expected that the Advisory Board for Medical Specialties would name some one at its meeting to be held on February 11 to represent that organization on the Committee.

PROGRESS REPORT ON THE ANALYSIS OF QUESTIONNAIRES SENT TO MEDICAL OFFICERS

Lieut. Col. H. C. Lueth, Liaison Officer, stated that he had prepared a report which comprised more than fifty-eight typewritten pages and would at the moment present only the highlights, and that he hoped the Committee would approve having the complete report printed in *THE JOURNAL*.

Following is a brief summarization of Colonel Lueth's extremely informative report:

1. Future educational desires of medical officers on duty with the Army, Navy, Public Health Service and Veterans Administration were determined by a study of 21,029 returned questionnaires.
2. Nearly 60 per cent of the group, 12,534, wanted to take long courses (six months or longer) of further training in hospital or educational work. About one fifth of the group, 4,563, indicated they wished to take short courses (less than six months).
3. There were 3,922 medical officers, or 18.7 per cent of the group, who did not want any future training.
4. Requests for short courses included all specialties. The largest number of requests were for the following specialties in order of frequency: internal medicine, surgery, general review, obstetrics and gynecology, pediatrics, otolaryngology and ophthalmology.
5. The ten most popular special fields of training by means of long courses, in order of frequency of request, were surgery, internal medicine, obstetrics and gynecology, general review, psychiatry and neurology, pediatrics, orthopedic surgery, ophthalmology, radiology and otolaryngology.
6. Nearly two thirds of the group, 13,333, or 63 per cent, expressed a desire to become certified specialists. There were 3,324 medical officers nearly 16 per cent of the entire group, already certified by the American specialty boards. The remainder either did not care to be certified or did not mention their desires.
7. Nearly 40 per cent, 8,734 medical officers, came from private practice to the military services. Twenty two per cent, 4,640, came directly from internships, nearly 10 per cent, 2,191, came directly from residencies, and the remainder came from various types of practice. About 15 per cent failed to answer the question concerning their previous type of medical practice.
8. A comparison of the results of a pilot questionnaire and the present questionnaire was made. Long courses were requested by about one fifth more men in the final questionnaire than in the pilot questionnaire. Only two thirds as many men requested short courses in the final questionnaire as in the pilot. The difference was attributed to a change in the point of view of medical officers during the interval between the circulation of the questionnaire rather than to an error in sampling.

The report presented by Col. Lueth was accepted with thanks and commendation, and its publication at the earliest possible time was authorized.

REPORT ON BUREAU OF INFORMATION

Dr. Olin West stated that the Bureau of Information is now functioning but to a limited degree because of the extreme difficulty encountered in getting and keeping personnel. He stated that the Bureau had up to this time completed tabulations for thirty-eight states. Copies of the forms that are being used to secure information for the purposes of the Bureau and of the Instructions for Completing County Summary Sheets were submitted. Dr. West further stated that it was hoped and expected to have the cordial cooperation of the constituent state medical associations and the component county medical societies in the Bureau's effort to collect all pertinent information. He stated that inquiries are coming in from men on active duty but to a larger extent from men who have already been discharged and that he was confident that the Bureau will perform a helpful service. In reply to questions, Dr. West stated that the state medical associations had been informed of the work of the Bureau and many had expressed their willingness to cooperate; that instructions had been forwarded to the county medical societies; that some of the state societies have organized their own plans along these lines and that the Bureau will keep in close contact with all of them.

It was stated by Colonel Lueth that at present the problem is threefold: education, licensure and location. Information on

educational facilities is best handled in one central place, and Dr. Victor Johnson, Secretary of the Council on Medical Education and Hospitals, is attempting to perfect a plan toward this end so that inquiring medical officers can be informed of available opportunities for training. The question of location in specific communities is a local problem, which will be referred to the state agencies under close cooperation with the central file.

It was brought out in the discussion that there is much confusion in the states concerning the selection of hospitals and educational institutions under the provisions of the G. I. bill; that in some states the state department of education is advising the governors—in several states the organization of the work is behind and in others far ahead, and that it will be necessary to "tie up" the hospital, educational and licensing elements into a coordinating group. The Committee on Postwar Medical Service will be able to exercise such a coordinating action.

On motion of Dr. Paullin a committee was appointed to draw up recommendations on these questions. The committee, composed of Dr. Shoulders, Miss Switzer and Dr. Collier, presented the following resolution, which was adopted after discussion in which it was noted that under the G. I. bill the governors of the states are given control over all phases of education of veterans:

Resolved, That the chair be authorized to appoint a subcommittee to

1. Draw up recommendations to the governors of the several states concerning the medical education and postgraduate training of veterans under title II of Public Law No. 346, the Servicemen's Readjustment Act of 1944, with particular reference to the certification of institutions as qualified to give such training, and
2. Coordinate this effort with related medical and health problems in the state.

The Chairman announced the appointment of the subcommittee authorized under the foregoing resolution, as follows, stating that the new subcommittee would be expected to report back to the Joint Committee at its next meeting: Dr. H. H. Shoulders, Chairman, Dr. James E. Paullin, Rev. A. M. Schmitalla and Dr. Frederick A. Collier, with Miss Mary Switzer and Lieut. Col. H. C. Lueth as consultants.

PROGRESS REPORT ON EDUCATIONAL OPPORTUNITIES FOR MEDICAL OFFICERS

Dr. Victor Johnson presented a progress report on educational opportunities for medical officers, stating that it would be necessary to modify some of the estimates of available residencies on the basis of the analysis presented by Colonel Lueth. He stated that developments so far are promising and, if institutions and individuals involved continue with the same vigor and industry, the need will be met. Further reports will be made to the Committee.

During the discussion of Dr. Johnson's report, the question was asked if all of the residencies that would be available are of a type that would lead to certification by specialty boards, and the reply was that many would be second year training and that those hospitals initiating new residencies would have to be considered by the Council on Medical Education and Hospitals and by the specialty boards. This progress report will be continued at the next meeting.

REPORT OF SUBCOMMITTEE TO CONFER WITH THE SURGEONS GENERAL ON EDUCATION OF MEDICAL OFFICERS

(Dr. Collier, Chairman; Dr. Palmer; Father Schmitalla;
Dr. Johnson; Lieutenant Colonel Lueth)

Dr. Collier stated that his committee had nothing new to report. Father Schmitalla thought there were other questions the subcommittee might look into, and the subcommittee was continued to follow up such phases as it may consider necessary and report at the next meeting.

PROGRESS REPORT ON ARMY AND NAVY PLANS FOR RESIDENCIES AND GRADUATE STUDY

Capt. William E. Eaton had little to add to the report given at the last meeting when he had informed the Committee that the Surgeon General of the Navy had accepted certain plans for providing refresher courses for naval medical officers. Since then the professional division of the Bureau has been pursuing the classification of naval hospitals for internship and graduate training, and information relative to fellowships and residencies has been sent to officers in command. He stated

that an attempt is being made to improve methods of training that have been in effect for many years, and that activity in the whole matter is not yet completed.

Col. G. R. Gessner reported that the Army is readjusting the specialties practiced in its general hospitals and increasing and readjusting the size of the facilities now available. The Surgeon General has deferred any further action until a little firmer basis can be found on which to work before establishing a program of this type in Army hospitals. With the publication of Army Service Forces Circular No. 41 on Feb. 5, 1945 refresher professional training was authorized for officers of the Medical Corps who for the past twelve months or longer have been in administrative or command positions and who it is contemplated would be reassigned to professional duties. This training will be given in hospitals in both medicine and surgery and will be voluntary and available to any officer of the Medical Corps, with priority given to those who have been overseas. Such officers will be ordered to temporary duty to take the course of instruction on their own request and will be continued in active service.

Brig. Gen. Fred W. Rankin stated that the refresher course plan has nothing to do with the specialties, and that the Army has no intention of putting these men into a type of specialized training that would qualify them for specialty board certification.

Col. F. V. Meriwether, representing the Public Health Service, in place of Dr. R. C. Williams, stated that Dr. Williams had written him that in service hospitals there will be places for about thirty residencies, which will be available after the war and that the contemplated expansion may raise the number somewhat. He stated, with reference to education, that the Public Health Service is carrying on a training course in civilian schools for the benefit of Public Health Service officers, both regular and reserve, and that this is a more or less specialized public health training.

The chairman indicated that he would ask for further progress reports from each service at the next meeting.

REPORT OF WAR SERVICE AND POSTWAR PLANNING COMMITTEE OF AMERICAN DENTAL ASSOCIATION

The Chairman presented a statement he had received from Dr. C. Willard Camalier, Chairman of the War Service and Postwar Planning Committee of the American Dental Association, concerning the work of that committee, and stated that the invitation to the American Dental Association to send a representative to future committee meetings would be renewed.

REPORT OF SUBCOMMITTEE ON SURPLUS MEDICAL AND HOSPITAL SUPPLIES

(Dr. Palmer, Chairman; Dr. Irons; Dr. Fishbein;
Father Schmitalla; Miss Switzer)

Miss Switzer reported that since the last meeting of the Committee on Postwar Medical Service a Surplus Property Board had been appointed; that the U. S. Public Health Service had drawn up a plan for the disposal of surplus medical supplies, and that Dr. Paul M. Stewart, who had prepared the plan, had sent copies of it to the various professional organizations interested. After discussion, this subcommittee was continued with Father Schmitalla as Chairman in place of Dr. Palmer. Dr. George Morris Piersol was appointed a member of this subcommittee. The subcommittee was instructed to review the plan and to report back to the Joint Committee with recommendations to be presented to the American Medical Association.

LAWS CONCERNING TEMPORARY LICENSURE: PROGRESS REPORT

Dr. Walter L. Biering reviewed the previous actions of the Committee on Postwar Medical Service in the matter of temporary licensure and stated that the Federation of State Medical Boards was having a meeting within the next two days at which Dr. Paul C. Barton, executive officer of the Procurement and Assignment Service, is to present a discussion of the matter and bring to the attention of the delegates additional facts regarding the need in certain communities. He stated further that at the present time four states—Pennsylvania, Delaware, Nevada and Florida—have adopted statutes

involving temporary licensure; that no measures have been introduced in other state legislatures now in session, and that at the coming meeting of the Federation the attitude of that body toward temporary licensure should be determined. He gave a résumé of a report that Colonel Lueth is to make to the Federation delegates on information with respect to licensure that has been gleaned from the questionnaires sent to medical officers. Dr. Biering stated that the Federation of State Medical Boards will be glad to do its utmost to bring about an equitable and desirable solution of the problem.

Colonel Lueth asked that approval of the Committee be given him to provide Dr. Biering with the material on licensure obtained from the analysis of the questionnaires. This was granted.

REPORT OF SUBCOMMITTEE TO CONFER AND COOPERATE WITH VETERANS ADMINISTRATION CONCERNING EDUCATIONAL ASSISTANCE FOR VETERANS

(Father Schwitalla, Chairman; Drs. Collier and Palmer)

Father Schwitalla said that his subcommittee had nothing new to report. He stated that one big difficulty being encountered by most of the veterans is the availability of service in hospitals.

REPORT OF SUBCOMMITTEE ON ESTABLISHMENT OF MEDICAL CORPS IN VETERANS ADMINISTRATION

(Father Schwitalla, Chairman; Drs. Shoulders and Sloan)

Father Schwitalla reported that he had held a number of conferences in an effort to familiarize himself with the laws governing the Veterans Administration and the methods by which its medical personnel was being administered under Civil Service. The criticism of the medical care under the Veterans Administration has been increasingly vocal during the last few weeks. Examples were quoted. It was pointed out further that activities were in progress contemplating the reorganization of medical procedures under the Veterans Administration. A further report was promised for the next meeting of this committee.

SOURCES OF FUNDS TO BE USED FOR POSTWAR MEDICAL EDUCATION

Mr. Graham L. Davis informed the committee that the trustees of the W. K. Kellogg Foundation had recently approved a program under which financial assistance would be given over a three year period to a selected group of fifteen medical schools in the development of postgraduate educational opportunities for physicians in the areas they serve and to eight universities interested in establishing courses in hospital administration for both physicians and laymen.

OTHER POSTWAR PROPOSALS

Miss Switzer, who had been requested at the December meeting to gather material on the postwar planning of other organizations, reported that it had been impossible because of the pressure of other duties to go into this matter, and the Chairman stated that it would carry over to the next meeting.

PROGRAMS FOR ENROLLMENT OF MEDICAL STUDENTS

Colonel Gessner and Captain Eaton both stated that they would gather information as definite as possible concerning the status of the Army Specialized Training Program and the Navy V-12 Program for presentation by themselves or by someone else more closely connected with these matters at the next meeting of the Committee on Postwar Medical Service.

LETTERS FROM MEDICAL OFFICERS IN SERVICE

The Chairman informed the Committee that letters of complaint that had been received from medical officers had been handled in the manner agreed on by the Committee at its December meeting.

INFORMATIONAL REPORTS

Association of American Medical Colleges.—The Chairman informed the Committee that Dr. Fred C. Zapffe, representing the Association of American Medical Colleges, could not be present but that he expected to attend the next meeting, at which time he would hope to provide the Committee with pertinent information.

Wartime Graduate Medical Meetings.—In the absence of Dr. F. F. Borzell, acting chairman of the Central Committee

of the Wartime Graduate Medical Meetings, the Chairman stated that the work is being carried on; that the surgeons general had been appealed to for their aid in continuing the meetings under the wartime transportation restrictions, and that the details of the programs are being published regularly in *THE JOURNAL*, the *Annals of Internal Medicine* and the *Bulletin of the American College of Surgeons*.

Federation of State Medical Boards.—Dr. Biering had nothing to report beyond what he had had to say earlier in the meeting with respect to licensure.

American Hospital Association.—Mr. Graham L. Davis stated that one of the major interests of the Hospital Association is Senate Bill 191, the Hospital Construction Act, or, as sometimes called, the Hill-Burton bill; that one of the purposes of the bill is to relocate physicians where they can be of the greatest use, which, as he understood it, was also one of the purposes of the Committee on Postwar Medical Service. He stated that, if it works out, the major part of the funds appropriated will be spent on hospitals in rural areas; that the federal government has a function and a responsibility for distributing the funds on the basis of need; that under the bill the Surgeon General of the U. S. Public Health Service would take into consideration the economic status in the particular area, and that some of the poorer states would receive 75 per cent assistance.

Mr. Davis requested as much support as possible from the American Medical Association toward the passage of the bill. He stated that the Hospital Association was cooperating very closely with the Surgeon General in the matter, and that thirty-three states now have in process studies of hospital needs.

Father Schwitalla informed the Committee that the other hospital associations had collaborated with the American Hospital Association in the preparation of the Hospital Construction Act and gave as points in its favor that while it centralizes responsibility in the hands of the Surgeon General it makes it incumbent on him to consult with his advisers; that the needs of the states are dominant in size of the funds allotted, and that the bill safeguards the relationship between the tax supported hospitals and the private hospitals.

Veterans Administration.—Col. Hugo Mella reported that the Veterans Administration is still working on the development of residencies; that a number of the Veterans hospitals had been surveyed by the American College of Surgeons for that purpose, but that it probably will not be possible to ascertain the complete number of residencies available until after the war. Each station after being surveyed has been asked to build up its plans.

Liaison Office.—Lieutenant Colonel Lueth announced that Lieut. Col. R. D. Bickel had been assigned to the Liaison Office at the American Medical Association headquarters and was now functioning. The Committee expressed its satisfaction at having Colonel Bickel present.

Procurement and Assignment Service.—Dr. James E. Paullin, member of the Directing Board of the Procurement and Assignment Service, stated that the Procurement and Assignment Service has contacted all discharge areas for physicians and is attempting through its state chairmen, to find out when a physician is being discharged and, if he has not already determined on a location, to furnish him with information as to understaffed communities.

CONTINUATION OF SUBCOMMITTEE

Dr. Collier suggested that the subcommittee of which he and Father Schwitalla were now the only members and of which Dr. Palmer had been chairman should be discontinued in favor of the larger subcommittee that had been appointed at this meeting. The Chairman stated that the subcommittee mentioned by Dr. Collier was a standing committee and that the new subcommittee was appointed to do a particular job and would be through when the job is done.

TIME AND PLACE OF NEXT MEETING

The next meeting of the Committee on Postwar Medical Service will be held at American Medical Association Headquarters in Chicago on March 17, 1945.

The meeting adjourned at 1:10 p. m.

H. H. SHOULDERS, M.D., Secretary.

Washington Letter

(From a Special Correspondent)

March 12, 1945.

Medical Science Eliminating Venereal Diseases

Such progress is being made by medical science against venereal disease that within five years syphilis and gonorrhea will be removed from the list of major health problems, according to Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service. In an OWI report Dr. Parran stated that in the last eighteen months penicillin has had a "cure rate" of 96 per cent among all gonorrhea patients and also "cures some cases of infectious syphilis." The report dealt in detail with wartime health and problems to be expected when peace returns. There is no indication of a serious decline in the nation's mental and physical health, but Dr. Parran warned that the "lines against disease are lightly held." Shortages of medical manpower and the shifting population "leave us vulnerable to a breakthrough on many fronts." The shortage of doctors and nurses for civilians was expected to continue until both Germany and Japan are defeated. In the first ten years after the war the country will need 417,000 new hospital beds, including 191,000 for mental patients and 60,000 for the tuberculous. Installations of all the hospital beds and health centers which would be needed would cost almost \$2,000,000,000, Dr. Parran estimated. Rural areas would have an urgent need for small, well equipped hospitals and health centers.

Campaign Planned to End Venereal Disease by 1950

The plan to exterminate venereal disease by 1950 has been explained by Army, Navy and Federal Security Agency representatives to law enforcement, health, welfare, trade, industrial and civic officials in three key cities, Oklahoma City, San Antonio, Texas, and Columbia, S. C., Paul V. McNutt, Federal Security Administrator, has announced. Mr. McNutt said the fact that 40 per cent of venereal disease cases reported by the Army and Navy are acquired by enlisted personnel while on furlough indicated the need for a concerted community attack on prostitution, promiscuity and venereal disease. Until recently the venereal disease control program has been centered in war industry areas and cities near military cantonments, but the new developments are said to indicate that the problem is nationwide and not confined to war impacted areas. Mr. McNutt said that adding to the need for a new approach to the problem were recent advances in medical science in treating venereal infections, among which are rapid treatment methods for syphilis and the release of penicillin to civilian physicians for treatment of gonorrhea. Appearing at the three conferences were Thomas Devine, newly appointed director of the Social Protection Division, Office of Community War Services, Federal Security Administration; Mark McCloskey, director of the Office of Community War Services; Lieut. Col. Thomas H. Sternberg, director of the Venereal Disease Control Division, Office of the Surgeon General, War Department; Comdr. W. H. Schwartz, officer in charge of the Venereal Disease Control Section, U. S. Navy, and Dr. J. R. Heller, medical director in charge of the Venereal Disease Division, Public Health Service, Federal Security Administration.

Neuropsychiatric Institute Proposed for Capital

Construction of a \$4,500,000 plant in Washington by the Federal Works Administration to house a proposed National Neuropsychiatric Institute is provided in a bill introduced in the House by Representative Priest, Democrat of Tennessee. The institute would be organized under the U. S. Public Health Service "for the purpose of conducting research, investigations, experiments and demonstrations relating to the cause, diagnosis and treatment of neuropsychiatric disorders." It would also make grants in aid to universities, hospitals, laboratories and other public and private institutions and to individuals for research projects recommended by a national advisory mental health council provided in the bill. The Surgeon General of the U. S. Public Health Service would appoint six such council members from leading medical and scientific authorities. The plant would be situated in the capital and would include hospital buildings and facilities, together with buildings which

might be devoted to laboratory and experimental work. Under the bill the Federal Works Administration is "authorized to acquire, by purchase, condemnation or otherwise, a site or sites in or near the District of Columbia." Meantime Congress is considering a bill to permit Georgetown University to build a taller medical school hospital than the present law allows. The House District Committee has reported favorably on the request to increase the permitted building height from 90 to 110 feet. Columbia Hospital officials stress urgent need for a nurses' home and training school to be erected after the war.

House Votes to Draft Unmarried Graduate Nurses

By a vote of 347 to 42 the House of Representatives voted to register for the draft virtually all graduate nurses from 20 to 45 years of age, but permitting only unmarried nurses to be subject to induction. All nurses acceptable to the services will be tendered a commission as second lieutenants. All male nurses who are qualified are included, there being about 4,000, of whom 2,000 are in the services but not used as nurses. Widows and divorcees with dependent children are required only to register. Although the measure has yet to have Senate approval, the Army has indicated that it will not back down on its request for a nurse draft. A spokesman for Surg. Gen. Norman T. Kirk, who had just returned from a Pacific tour, said that a draft will produce needed nurses much faster than any voluntary recruitment system.

Miss Mary A. Roberts, editor of the *American Journal of Nursing*, said, in opposition to the measure, "If they draft nurses they will get draft service. You can't draft the spirit of nursing." Officials of the American Nurses Association, with representatives of the Army, Navy, Veterans Administration and Red Cross attending, conferred here to map out plans for a countrywide, direct recruitment campaign, which they said "will give nurses the information they need to straighten out earlier confusion." President Roosevelt, in a telegram to Katharine J. Densford, president of the American Nurses Association, has reasserted his stand on the need of nurse draft legislation as well as intensified efforts to obtain volunteers.

Medical Research to Be Pressed After War

Unsolved problems in medicine will be attacked with the same vigor and success in the coming years of peace as they have under the stimulus of war, Major Gen. James C. Magee, former Surgeon General of the Army, told the forty boy and girl finalists in the fourth annual science talent search conducted by the Science Clubs of America. "The mobilization of scientific talent devoted to medical research in the past few years," he said, "has been productive of enormous benefits to the military establishments and to mankind at large." Examples that he cited were the development of dried plasma and serum albumin as substitutes for whole blood, development of new sulfonamide drugs and the rediscovery and development of penicillin and of DDT. Counseling the youthful scientists to study "pure" science instead of the early tackling of practical problems, Dr. Roger Adams of the Office of Scientific Research and Development said that the men who had the "lucky breaks" in the development of penicillin and the sulfonamide drugs were chemists who were prepared by thorough general training. In connection with the need by industry of scientific knowledge, Maury Maverick, head of the Smaller War Plants Corporation, has urged a "crusade of science" through technical advisory services in every nation to keep industry the world over supplied with information.

Further Assistance for Blind Is Advocated

The armed forces program for blinded men, and efforts to legislate further aid for civilian blind, were lauded by Walter D. Kallenbach, blind evangelist and president of the National Association for the Advancement of the Blind, and Mary Cook Coward, blind soprano, who visited Washington to investigate pending legislation for postwar rehabilitation of the sightless. They stressed, however, that what is most vital is an educated public willing to give the blind a chance at normal and interesting careers. Blind persons now working at war jobs will be forced to depend on charity or to turn to selling shoe laces or making brooms, unless employers are openminded about hiring them. Mr. Kallenbach said that the men blinded in war constitute only 1 per cent of the blind population.

Capital Notes

Dr. George C. Ruhland, 65, completing his tenth year as District of Columbia health officer, announced that the Washington death rate had been reduced by 30 per cent since March 1, 1935. Personnel this year totals 2,163, compared with 246 in 1935.

A one week course in automobile driving for amputee patients is being conducted by the American Automobile Association at Walter Reed-Forest Glen Hospital.

The District of Columbia Medical Society has endowed the Davidson Lecture, in honor of Dr. Edward Young Davidson, with the interest from \$3,000 to be awarded biennially to a lecturer selected in competition. Essays are to be submitted under a *nom de plume* by physicians or other scientists working in the District.

Official Notes**BUREAU OF INFORMATION SENDS SUMMARY SHEETS TO STATE SOCIETIES**

State medical societies have recently been mailed summary sheets by the Bureau of Information for distribution to county societies. The information requested on these blanks relates to the number of physicians in active practice, certain economic conditions of the community and other appropriate details in the counties involved. The early distribution of these sheets to the county societies has been requested. The purpose is to obtain information which will be helpful to areas needing physicians, as well as to physicians seeking locations in which to practice. In order to be of service to communities and to the physicians, it is essential that these summary sheets be returned promptly. As soon as the data are supplied they can be used to aid medical officers separated from service. Lieut. Col. Robert D. Bickel, M. C., liaison officer to the American Medical Association from the Surgeon General's Office, is tabulating the information as soon as received, so that it can be made available at once to discharged medical officers. State and county society executives to whom these summary sheets are sent are urgently requested to expedite the completion and return of this material.

**AMERICAN MEDICAL ASSOCIATION-
N. B. C. NETWORK PROGRAM**

Doctors Look Ahead on March 17 is to be devoted to an appeal to the women of the United States to meet the need for Army and Navy nurses and for medical technicians. Graduate nurses eligible for commission are urgently needed, and so are women members of the WAC who can be trained to perform simple technical procedures in the laboratories and thus release more highly trained personnel for the complicated procedures. Public service of this type has been performed frequently as a part of Doctors Look Ahead and previous American Medical Association and National Broadcasting Company programs.

Inquiries have been received by the Bureau of Health Education asking for transcriptions of Doctors Look Ahead. These network programs should not be confused with the transcribed programs also available. When a program has been broadcast on a nationwide network transcriptions are useless because no radio station will use an identical program a second time except in rare instances where programs of unusual merit are rebroadcast by request.

Doctors Look Ahead is heard on one hundred and twenty-three stations of the National Broadcasting Company network each Saturday at 4 p. m. Eastern War Time (3 p. m. Central War Time, 2 p. m. Mountain War Time and 1 p. m. Pacific War Time). Some stations may record the program and broadcast it at a time which suits their schedule better. Local newspaper radio-announcements should be consulted.

The next four programs deal with the following topics:

March 17.—Women at War, in cooperation with the Office of War Information. The speaker will be Major Gen. Norman T. Kirk, Surgeon General, U. S. Army.
March 24.—Juvenile Delinquency.
March 31.—Accidents.
April 7.—Tuberculosis.

**Council on Medical Service and
Public Relations****PUBLIC RELATIONS MEETING
IN VIRGINIA**

A detailed discussion of public relations in all its phases was held by the Arlington County Society of Virginia on February 19. This meeting was attended by Dr. Joseph S. Lawrence, who described the Washington Office of the Council and answered questions concerning its work. Many physicians who attended expressed the desire that the Council develop an active public relations program "that would extend beyond the medical profession." The Arlington group also expressed a desire for definite information as to the development of voluntary insurance plans by state and county medical organizations.

The meetings which Dr. Lawrence has attended include the Legislative Conference of the Indiana State Medical Association, Secretaries' Conference of the Michigan State Medical Society, Conference of County Medical Society Secretaries and Editors of the Medical Society of the State of Pennsylvania, at which he spoke on "Realism in Public Relations," Toledo Academy of Medicine, the Cabell County Medical Society of West Virginia and the Arlington County Medical Society.

REGIONAL CONFERENCES DURING APRIL

The Council on Medical Service and Public Relations has scheduled three regional conferences on the West Coast during April. These conferences, which are to be held in Portland, Ore., San Francisco and Los Angeles, will complete a series of seven formal regional meetings and one informal session held by the Council. Representatives from eleven states and Alaska have been invited to attend the April meetings, each of which will include a morning program by speakers from various bureaus and departments of the American Medical Association and an afternoon question and answer round table discussion.

The schedule for these meetings follows:

April 7. Northwest Conference, Portland, Ore., for Oregon, Washington, Idaho, Montana, Wyoming and Alaska.

April 10. Northern California Conference, San Francisco, for Nevada, Colorado, Utah and northern California.

April 13. Southern California Conference, Los Angeles, for southern California, New Mexico and Arizona.

In addition to the regional meetings the representatives of the American Medical Association will attend the House of Delegates meeting of the Oregon State Medical Association to be held April 8 in Portland. Representatives of the American Medical Association who will appear on the program will be Dr. John H. Fitzgibbon, Portland, Ore., Chairman of the Council; Dr. E. J. McCormick, Toledo, Ohio, Vice Chairman of the Council; Dr. Joseph S. Lawrence, Washington, D. C., Director of the Washington Office of the Council; Mr. J. W. Holloway Jr., Director of the Bureau of Legal Medicine and Legislation; Dr. Carl Peterson, Secretary of the Council on Industrial Health; Mr. Thomas A. Hendricks, Secretary of the Council on Medical Service and Public Relations, and Dr. Victor Johnson, Secretary of the Council on Medical Education and Hospitals, who is on the program for the San Francisco and Los Angeles meetings.

Woman's Auxiliary**Indiana**

The Woman's Auxiliary to the Indiana State Medical Association has urged all of its members to carry a copy of *Hygeia* to all Parents and Teachers Association and club meetings as a means of promoting its distribution. "Hygeia for Health" has been their suggested slogan.

New York

Dr. Nathan B. Van Etten and Mr. Dwight Anderson addressed the executive board meeting of the Woman's Auxiliary to the Medical Society of the State of New York January 24 and 25. The subject was "The Woman's Auxiliary and Medical Public Relations."

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Changes in Health Officers.—Dr. Albert F. Zips, health officer of Sacramento County, has taken over the activities of the health officer of Sacramento, Dr. Herbert F. True, who retired because of ill health.—Dr. Wayne P. McKee has been named health officer of Ferndale in Humboldt County, succeeding Dr. Herbert C. James.

Seminar on Advanced Psychotherapy.—Dr. Frieda Fromm-Reichmann, director of psychotherapy at Chestnut Lodge Sanitarium, Rockville, Md., will give a seminar on advanced psychotherapy in San Francisco, March 26-April 2, under the auspices of the department of psychiatry of the University of California Medical School, Stanford University School of Medicine and the Mount Zion Hospital.

Research on Epilepsy.—A gift of \$2,000 from Mr. and Mrs. Eugene Fowler, Newcastle, has been made to the University of California Medical School, San Francisco, to be known as the Mother Lode Fund, with the request that it be used in research on epilepsy. The work will be carried out at the University of California Hospital under the direction of Dr. William J. Kerr, professor of medicine in the medical school.

Health Board to Observe Seventy-Fifth Anniversary.—On April 15 the seventy-fifth anniversary of the organization of the California State Department of Public Health will be observed. The department is said to be the second of the kind to be established in the United States, the first being the Massachusetts Department of Public Health (*THE JOURNAL*, January 20, p. 173). According to *California's Health*, the official bulletin of the state health department, the transcontinental railroad was completed only a few months before the creation of the board, and the enactment of progressive legislation to establish the California state board of health at this early period is a noteworthy event.

DISTRICT OF COLUMBIA

History of District Society Completed.—After two years of research Dr. John B. Nichols, Washington, chairman of the committee on history, has completed writing the history of the Medical Society of the District of Columbia from the time of its organization to the present day. Serving with Dr. Nichols on the committee on history have been Drs. William J. Mallory and Joseph S. Wall.

GEORGIA

Twenty-Five Years of "Georgia's Health."—The January issue of *Georgia's Health*, the official bulletin of the Georgia Department of Public Health, marked the completion of twenty-five years as a health education medium.

Hospital News.—The Emily Winship Woodruff Maternity Center of Crawford W. Long Memorial Hospital, Atlanta, has been opened. The nine story building was begun in 1941, but work was delayed because of lack of essential materials. The new unit has all the accommodations needed for the expectant mother, and patients coming to the center who are not able to pay regular fees may have services for \$27.50.

Ophthalmic Seminar at Emory University Canceled.—Emory University School of Medicine, Atlanta, announces the cancellation of the ophthalmic seminar scheduled to be held in Atlanta April 19-21, planned to honor the memory of Dr. Abner Wellborn Calhoun, the first professor of ophthalmology at Atlanta Medical College, which was established in 1854 and which in 1915 became the school of medicine of Emory University. Dr. Calhoun was born April 16, 1845 and died Aug. 21, 1910.

IDAHO

Physician Senator Resigns.—Dr. Charles A. Robins, St. Maries, has resigned as state senator because he is the only physician and surgeon in Benewah County, according to *Northwest Medicine*.

State Medical Board.—Drs. Hoyt B. Woolley, Idaho Falls, Robert L. Rodwell, Nampa, and Glenn McCaffery, Kellogg, were recently appointed members of the state board of medical examiners. Reappointments include Drs. George C. Halley, Twin Falls, Samuel M. Poindexter, Boise, and Clifford O. Armstrong, Moscow.

ILLINOIS

Chicago

New Health Editor of Chicago Tribune.—Dr. Theodore R. Van Dellen, medical consultant to the *Chicago Tribune* since 1941, has been appointed health editor, succeeding the late Dr. Irving S. Cutter. Dr. Van Dellen graduated at Northwestern University Medical School in 1936.

Branch Society Meeting.—The North Side Branch of the Chicago Medical Society will meet at the Drake Hotel, April 5. Speakers will be Dr. Edwin C. Hamblen, Durham, N. C., on "Functional Uterine Bleeding"; Frank X. Gassner, D.V.M., Fort Collins, Colo., "Some Endocrine Problems in Veterinary Medicine," and Warren O. Nelson, Ph.D., Iowa City, "Endocrine Factors in the Development and Function of the Breast."

Readjusting with the Returning Servicemen.—The readjustment from war to peace must take into consideration the emotional as well as the physical and material needs of soldier and civilian; the conditioning of the civilian for the soldier's return and the renaturalization of the soldier was the theme of the thirty-sixth annual meeting and two day institute sponsored by the Illinois Society for Mental Hygiene, March 8-9 at the Knickerbocker Hotel. Among the speakers were:

Dr. Rudolph G. Novick, Elgin, Ill., medical director, Illinois Society for Mental Hygiene, The Conference Theme.

Col. William J. Bleckwenn (MC), He Takes Off His Uniform, Lieut. Comdr. Louis A. Schwartz (MC), Emotional Disorders in the Disabled Veteran.

Francis Rosserance, Ph.D., Evanston, Emotional Aspects of Educational Problems.

Harold Taylor, employment manager, Hawthorne Works, Western Electric, Emotional Aspects of Industrial and Employment Problems. Dr. Gregory Zilboorg, New York, Psychosocial Paradoxes of Returning from the War.

Marguerite G. Nordman, director of home service, St. Louis chapter, American Red Cross, Helping in the Readjustment of the Soldier and His Family.

Dr. George S. Stevenson, New York, Rebirth of a Civilian.

Three round table discussions covering industry, education and religion formed a part of the second day's session.

INDIANA

Constitution Amended to Permit Physician on Board.

—For the first time since the General Hospital Association of Elkhart was organized in 1909, a doctor of medicine has been elected to its board of directors. It was necessary to change the constitution to provide for the addition of Dr. David D. Todd, head of the surgical section of the medical staff at the Elkhart General Hospital, who was chosen to succeed Mrs. Cora Elliott, secretary of the board. To place Dr. Todd on the board the constitution was amended to read "any citizen over the age of 21 years, residing in the city of Elkhart, shall be eligible to serve as a director of the association." The exception removed from the constitution read "excepting physicians, surgeons, dentists, osteopaths, the practitioners of any healing cult or science, and clergymen." Newspapers reported that Dr. Todd made the motions for the amendments, stating that a physician on the board could help with the administration of the hospital, get cooperation of the nursing staff as well as the nonprofessional staff of the hospital, maintain the good will of the hospital and assist in solving the medical problems of the future.

Governor Outlines Health Program.—On January 25 Governor Gates outlined legislative program of his administration for general expansion of the state's health service facilities, according to the *Indianapolis Times*. Among his recommendations was the reorganization of the state board of health, increasing its membership from four to seven to include three physicians, one dentist, one sanitary engineer, one pharmacist and one woman who has "demonstrated interest in public health." The bill carrying this recommendation, now passed and signed by the governor, includes a nurse and a veterinarian as members of the board, bringing the total to nine. Other recommendations include:

Creation of full time health boards or departments in all towns and smaller cities.

Creation of a state board to recodify all state health laws for enactment by the 1947 legislature.

Legislation authorizing cities and counties to create funds for the construction of health centers and clinics through endowments, subscriptions or direct appropriations.

Creation of two new divisions under the state health board, one for dealing with diseases of aged persons and a dental health department.

Strengthening of laws on tuberculosis quarantine, compelling persons unwilling to be committed to be examined by a three physician board.

An inspection service and licensing by state health board of hospitals practicing medicine, surgery and obstetrics, extending control over present maternal and child health service.

Expansion of the stream pollution control board from six to seven members.

IOWA

State Meeting Canceled.—The Iowa State Medical Society has canceled its annual session, scheduled to be held in Des Moines April 19-20.

KANSAS

Infectious Jaundice in Riley County.—Twenty-seven cases of infectious jaundice were recently reported in Riley County, 16 from Manhattan and 11 from Ogden. The local health department, of which Dr. Fred P. Bestgen, Manhattan, is director, and the laboratory at the Kansas State College of Agriculture and Applied Science, Manhattan, assisted with diagnostic procedures, with consultation service from Dr. Clarence H. Kinnaman, Topeka, state epidemiologist, and C. A. Hunter, Ph.D., Topeka, director of laboratories, state board of health, according to the *News Letter*. Of the Riley County cases 14 were in children between the ages of 5 and 15 years and there were 4 cases in children less than 5 years of age, 4 cases in persons 25-29 years of age, 2 in the 50-54 year age group and 1 case each in the 15-19, 45-49 and 70-74 year age groups. Although most families in which cases occurred owned dogs as family pets and the highest incidence was in children from 5 to 14 years of age who would be likely to play with dogs, health authorities emphasized the present need for rat control and stressed careful washing of all food-stuffs to remove possible contamination from both rats and dogs.

LOUISIANA

State Meeting Postponed.—The annual meeting of the Louisiana State Medical Society, scheduled to be held in New Orleans April 13, has been postponed.

Hospital News.—The new War Memorial Hospital, Leesville, was recently opened at a cost of \$250,000. The unit is one story high with buff brick exterior.

University News.—Beginning with the session of 1944-1945, Tulane University of Louisiana School of Medicine, New Orleans, broke the tradition of starting the freshmen students with the dissection of the human body by substituting instruction in biochemistry instead of gross anatomy, which has heretofore been delayed until the study of physiology is started in the latter part of the first year. The *Bulletin* of the Tulane Medical Faculty states that it is believed that the change will make for an easier transition from the premedical studies to those of the medical curriculum.

MASSACHUSETTS

Hospital News.—Plans have been announced to construct a new building for the New England Deaconess Hospital, Boston, to be eight stories high and accommodate 200 patients. A campaign has been started by the hospital to raise \$1,500,000 to finance the project.

Frederick Bailey Named Health Commissioner of Boston.—Dr. Frederick J. Bailey, Boston, who has been associated with the Boston Health Department almost continuously for the past forty years, was recently appointed health commissioner of Boston to succeed Dr. George Lynde Gately, now in the Navy. Dr. Bailey, who graduated at Harvard Medical School, Boston, in 1903, has been serving recently in the U. S. Naval Reserve.

Personal.—William L. Campbell, formerly of Berlin, N. H., has been appointed head of a new department devoted to education and research in food technology at the Massachusetts Institute of Technology, Cambridge. The new department will expand and extend the scope of the Samuel Cate Prescott Laboratories of food technology, of which Bernard E. Proctor, Ph.D., was recently appointed director (*THE JOURNAL*, February 10, p. 346).

MICHIGAN

Personal.—Dr. Emil Amberg, Detroit, was recently elected to emeritus membership in the Michigan State Medical Society. —Dr. William M. LeFevre has been appointed a member of the Muskegon board of health to succeed the late Dr. Samuel A. Jackson.

Raymond Hussey Honored.—Dr. Raymond Hussey, newly appointed dean of the School of Occupational Health and professor of preventive medicine at Wayne University Medical Science Center, Detroit (*THE JOURNAL*, February 17, p. 411), was guest of honor at a dinner February 28 sponsored by the committee on medical education of the Wayne County Medical Society. Dr. Hussey spoke on "The Future Development of Industrial Health Education in the United States."

Health Officers Association Created.—Dr. Clarence D. Barrett, Mason, was elected president of the recently organized Michigan Health Officers Association, which was set up to advance public health principles and practices, to recommend standards of employment based on education, training and experience, to make community health protection more complete and certain through study and conference with proper authorities and to strive for a good program for the retirement of health officers and staff members with pension and to seek legislative enactment to this end. Other officers include Drs. Otto K. Engelke, Ann Arbor, vice president, and Vladimir K. Volk, Saginaw, secretary-treasurer.

Industrial Medical and Surgical Conference.—The third annual postgraduate industrial medical and surgical conference, sponsored by the committee on industrial health of the Michigan State Medical Society in cooperation with the department of postgraduate medical education of the University of Michigan, will be held in Detroit, April 5. Among the speakers will be:

Drs. Winfred B. Harm and Earle A. Irvin, Detroit, Industrial Medicine—Cooperation Between Industrial Physicians and Private Practitioners.

Theodore P. Ryan, LL.B., Lansing, Problems Arising from Michigan's New Compensation Law.

Dr. Dudley A. Irwin, Pittsburgh, Treatment and Prevention of Silicosis with Aluminum Powder.

At a symposium on postwar problems of industrial health and medicine, at which Dr. Raymond Hussey, Detroit, will be the leader, participants include:

O. L. Beardsley, Detroit, Selective Placement of Workers—A Personnel Manager's Viewpoint.

Dr. Fenn E. Poole, Burbank, Calif., Selective Placement of Workers—A Medical Man's Viewpoint.

Dr. H. Graham Ross, Montreal, Psychosomatic Medicine in Industry. Major Roy P. Warren, S. C., Health Maintenance Engineering in Relation to Industrial Health.

Presiding at the sessions will be Drs. Andrew S. Brunk, Detroit, president of the state medical society, Kenneth E. Markuson, Lansing, chairman of the state industrial health committee, general chairman, and Patrick L. Ledwidge, Detroit.

NEW JERSEY

Personal.—Dr. Leslie Robert Angus, senior psychiatrist with the Institute of Living, Hartford, Conn., has been appointed medical director of the Bancroft School, Haddonfield.

Colonel Ash to Give Martland Lecture.—Col. James E. Ash, director, Army Institute of Pathology, Office of the Surgeon General, Washington, D. C., will deliver the tenth Harrison S. Martland Lecture at the Academy of Medicine, Newark, March 28, under the auspices of the Essex County Anatomical and Pathological Society. Colonel Ash's subject will be "The Army Institute of Pathology and Its Contribution to the Study of Diseases Prevalent in the Military Air Group."

NEW YORK

Meeting Canceled.—The Medical Society of the State of New York has canceled its annual meeting, scheduled to be held in Buffalo April 30-May 3.

Seminars on Rheumatic Fever.—The St. Francis Sanatorium for Cardiac Children, Roslyn, opened a course of seminars on rheumatic fever and rheumatic heart disease March 8 to continue once a week on Thursday. Demonstration of clinical material will be stressed at these conferences. Dr. Leo M. Tarau is medical director of the sanatorium.

Resignations in State Health Department.—Dr. Augustus B. Wadsworth, director of the division of laboratories and research, New York State Department of Health, Albany, retired January 31 after thirty-one years of continuous service. Dr. Marion F. Loew, assistant director of the division of maternity, infancy and child hygiene since 1936, retired from state service February 23. *Health News* reports that she will go to Antioch College, Yellow Springs, Ohio, to join the Samuel S. Fels Research Institute.

Graduate Lectures.—The Cortland County Medical Society will be addressed April 20 by Dr. Edward C. Hughes, Syracuse, on "Hemorrhages of the Latter Part of Pregnancy" and Dr. Orren D. Chapman, Syracuse, May 18, on "Diagnosis and Treatment of Meningitis." The Jefferson County Medical Society will be addressed April 12 by Dr. Clarence E. de la Chapelle, New York, on "Management of Acute Cardiovascular Emergencies." These lectures are sponsored through the cooperation of the state medical society and the state department of health.

New York City

Caroline Zachry Dies.—Caroline B. Zachry, Ph.D., director since May 1942 of the bureau of child guidance of the city school system, died February 22, aged 50.

Appointment of Medical Officers in Life.—The board of directors of the Life Insurance Company has made the following appointments, effective February 20:

Dr. Albert O. Jimenis to associate medical director.
Dr. Haynes H. Fellows to associate medical director.
Dr. Anthony J. Lanza to associate medical director.
Dr. George M. Wheatley to be assistant vice president, welfare.

Bequest to Finance Work in Psychiatry.—The Lester N. Hoffheimer estate has granted \$35,000 to Columbia University College of Physicians and Surgeons to finance the first year's expenses of the newly created Psychoanalytic and Psychosomatic Clinic for Training and Research (THE JOURNAL, Sept. 23, 1944, p. 247). The grant comes from the estate of Lester N. Hoffheimer, first lieutenant, Army Air Forces, who was killed in India in December 1943 and is the first made in the field of psychiatry under the lieutenant's will, according to *New York Medicine*. Lieutenant Hoffheimer left the bulk of his estate, approximating one million dollars, to philanthropic enterprises, the distribution of which is left to the discretion of three executors (THE JOURNAL, June 24, 1944, p. 588).

Deaths from Carbon Monoxide.—Escaping gas containing carbon monoxide killed 325 persons in New York City during 1944, 289 of the deaths occurring in homes. In a release to the press Dr. Ernest L. Stebbins stated that these are preliminary figures and that when the final returns were completed the total would probably be somewhat higher. The National Safety Council on January 15 reported that gas asphyxiation fatalities have increased 50 per cent since the beginning of the war. Gas killed 1,800 Americans in their homes during 1943, council statistics show. Carbon monoxide, dangerous because it is both colorless and odorless, caused most of these deaths. One fifth of these fatalities were caused by coal gas, mostly carbon monoxide, produced when stoves, furnaces or flues are defective or when dampers are not properly set. About half of the deaths were caused by illuminating gas. Makeshift arrangements to supplement rationed heat and badly worn equipment were named by the council as contributors to the increase. Poorly adjusted burners and leaky fittings are chief offenders.

NORTH CAROLINA

Personal.—Dr. James S. Gamble has been named superintendent of the Reeves Gamble Hospital, Lincolnton, and local surgeon for the Seaboard and Southern Railways succeeding his father, the late Dr. John R. Gamble.—Dr. Sigma V. Lewis has been appointed director of the Burke-Caldwell district health department with offices in Lenoir.

Pellagra Declines.—Fewer persons died of pellagra in North Carolina in 1944 than during any other year for which the records are available. For the entire year only 64 such deaths were reported to the state board of health and an all time low rate of 1.7 was recorded. During the previous year there were 110 deaths from this malnutrition disease, and the rate was 3.0. These figures are in sharp contrast with those of former years. In 1918, the peak year of United States participation in the first world war, the pellagra death rate in North Carolina was 25.7, and in 1929 and 1930, which were depression years, the rates rose to 32.0 for each year, after a recession that followed the war and coincided with "prosperity." With the easing of the depression the pellagra death rate again began to decline, but not to any considerable degree until after 1937. The rate that year was 13.0, but in 1938 it dropped to 7.3, and the down trend has been sustained since that time, being 5.9 in 1939, 4.7 in 1940, 3.8 in 1941, 3.0 in 1942 and 1943 and 1.7 in 1944, the lowest ever recorded. The general death rate in the state was 7.9 as compared with 8.1 the previous year. The infant mortality rate dropped to 44.7, a new all time record, and the maternal death rate fell to 2.9, also a new low rate for the state. A birth rate of 24.7 was recorded.

OKLAHOMA

State Meeting Canceled.—The Oklahoma State Medical Association has canceled its annual meeting, scheduled to be held in Oklahoma City.

Society Resumes Publication of Bulletin.—The Garfield County Medical Society recently voted to resume publication of its monthly journal, the *Bulletin*. Publication of the bulletin was suspended when Dr. Roscoe C. Baker, Enid, entered the

armed forces but, according to the *Journal of the Oklahoma State Medical Association*, he will have charge of the work when it is again printed.

County Society Enlarges Quarters.—The executive offices of the Tulsa County Medical Society, 1202 Medical Arts Building, Tulsa, have been remodeled following an addition of a large room to the society quarters. The medical library has been expanded, and separate offices have been constructed for the executive secretary. The medical credit bureau has also been enlarged. The Tulsa County Medical Society now utilizes the entire twelfth floor of the Medical Arts Building.

PENNSYLVANIA

Philadelphia

Dr. Blechschmidt Honored.—Dr. Dorothy C. Blechschmidt was honored at a luncheon recently given by the One Hundred Club of Philadelphia in recognition of her work at the Blechschmidt Cancer Prevention Clinic, located in the Doctors Hospital. The clinic was organized about three years ago and is named for Dr. Blechschmidt, who serves as its chief of staff. It is financed by a membership of almost 1,000 women; no salaries are paid, for all the service is voluntary (THE JOURNAL, July 1, 1944, p. 665). The One Hundred Club is an organization composed of past and present presidents of various organizations in Philadelphia.

Annual Health Institute.—The woman's auxiliary to the Philadelphia County Medical Society will hold its fifteenth annual health institute April 10 in the auditorium of the Philadelphia County Medical Society. "Health Problems in Wartime" will be the theme of the meeting. Among the speakers will be:

Col. Leonard G. Rowntree, M. C., Physical Fitness.
Dr. Rufus S. Reeves, Poliomyelitis.
Dr. Samuel B. Hadden, War Neuroses.
Mrs. David W. Thomas, president of the Woman's Auxiliary to the American Medical Association.
Hon. Noehmi S. Winnet, judge of Municipal Court, The Judge Looks at Juvenile Delinquency.
Dr. John H. Stokes, Problem of Human Relations as It Relates to Social Hygiene.
Lieut. Col. James B. Brown, M. C., Reconstructive Surgery.

The session will also be addressed by Dr. Charles L. Brown, president of the Philadelphia County Medical Society, and Dr. William Bates, president of the Medical Society of the State of Pennsylvania. Mrs. S. Dale Spotts, president of the woman's auxiliary of the county society, will preside at the meeting.

Colonel Ravdin Named to Barton Professorship.—Col. Isidor S. Ravdin, M. C., who is in command of an army hospital in India while on leave of absence from the University of Pennsylvania School of Medicine, has been appointed John Rhea Barton professor of surgery. Colonel Ravdin graduated at the University of Pennsylvania School of Medicine in 1918 and has been Harrison professor of surgery and director of the Harrison department of surgical research in the school of medicine since 1936; prior to that time he held other faculty posts, including the J. William White professorship of surgical research. Dr. Eldridge L. Eliason, who is now the Barton professor and a member of the faculty since 1907, planned to retire on July 1 but will continue for the present while Colonel Ravdin is on active service. Dr. Eliason graduated at the University of Pennsylvania School of Medicine in 1905 and joined the teaching staff as assistant instructor in surgery. In 1925 he was appointed professor of clinical surgery in the school of medicine and the following year to a similar post in the graduate school of medicine of the university. He has been John Rhea Barton professor of surgery since 1936 and professor of surgery in the graduate school of medicine since 1938.

UTAH

Three Man Committee Acts as Dean.—A committee of three members of the faculty of the University of Utah School of Medicine, Salt Lake City, has been appointed to direct the activities of the school, pending the appointment of a dean to succeed Dr. A. Cyril Callister, resigned (THE JOURNAL, February 10, p. 347). Members of the committee include Dr. Charles E. McLennan, professor and head of the department of obstetrics and gynecology, chairman, and Dr. Hyrum L. Marshall, professor and head of the department of public health and preventive medicine, and Chester A. Swinyard, Ph.D., associate professor of anatomy. The committee will serve in all administrative affairs of the school of medicine until the appointment of a new dean. Dr. Callister plans to return to the private practice of medicine, it was reported.

WASHINGTON

Reject Proposed Ban on Foreign Physicians.—A proposed ban by the King County Medical Society on membership of physicians educated outside the United States and Canada was rejected unanimously at a meeting of the society January 8. It was stated that the proposal was submitted with the idea that it is difficult in these times to check on the credentials of men educated in European medical schools. It was decided, however, that such action would be untimely.

Research Foundation Set Up in County Hospital System.—The establishment of the Foundation for Medical Research of the King County Hospital System was announced at a recent meeting of the medical board of the system in Seattle. According to the *Bulletin* of the King County Medical Society it is anticipated that the fund, of which \$25,000 is now available, will be of considerable interest to the community, as it will be open for donations and bequests to any one interested in promoting the advancement of knowledge in medicine, surgery and all of their branches. Administration of the fund will be placed directly in the hands of a committee of local physicians working under the direction of the board of trustees of the county hospital, and it is anticipated that it will grow to have considerable significance in cooperating in the development of research at the new medical-dental school of the University of Washington.

WEST VIRGINIA

Proposed Merger of Health Departments.—Merger of the health departments of the city of Charleston and Kanawha County has been recommended by Dr. Elias W. Langs, U. S. Public Health Service Reserve, who conducted a survey and made an exhaustive study of the matter early in the winter in cooperation with Dr. John E. Offner, Weston, state health commissioner. The survey, which followed the recommendation of the state medical association's fact finding and planning committee that all city health departments be merged with the health department of the county in which the unit is located, was made with the full consent of city and county officials. In his report Dr. Langs recommended that within two years after the merger all affiliated health agencies, including the entire school health service, be consolidated with the unit, which would be under the direction of an experienced health officer. Administration would be under the supervision of a nonpartisan board of health.

WISCONSIN

Position Available as Director of Laboratories and Research.—The Milwaukee City Service Commission announces an examination to fill the position of director of laboratories and research in the city health department. Additional information may be obtained from the Milwaukee City Service Commission, Room 716, City Hall, Milwaukee 2.

Lewis Danziger Wins Rogers Essay Contest.—Dr. Lewis Danziger, on the staff of the Milwaukee County Hospital for Mental Diseases, has been announced as the winner of the Rogers Memorial Essay Contest, sponsored by the Milwaukee Academy of Medicine and founded by the Rogers Memorial Sanitarium. Dr. Danziger won the first prize of \$200 for his manuscript on "Anoxia and Compounds Causing Mental Disorders in Man." The contest was established in 1943 (*THE JOURNAL*, June 19, 1943, p. 553).

Personal.—Dr. Mark A. Bailey was recently appointed health officer of Fennimore.—Dr. Valentine A. Gudex, Milwaukee, has resigned as deputy state health officer; he was connected with the state board of health for twenty-six years.—Edwin Broun Fred, Ph.D., professor of bacteriology at the University of Wisconsin, Madison, since 1943 dean of the college of agriculture, previously for nine years dean of the graduate school, has been elected president of the university to succeed Clarence A. Dykstra, LL.D., who has become provost of the University of California at Los Angeles.

Diagnostic Center Proposed.—The tentative plans to develop a diagnostic center in Wisconsin have been approved by an advisory committee of the state medical society to the state department of public welfare and its committee on public policy. The University of Wisconsin, Madison, has also pledged its cooperation. As outlined in the state medical journal, the building would be constructed in Madison close to the State of Wisconsin General Hospital to accommodate 150 persons who have been committed to one of the certain

state correctional institutions and for occupancy by persons placed on probation to the department of public welfare. The administration of the center is to be the function of the department of public welfare. The center would provide for the complete medical examination of all those, except those going to either Mendota or Winnebago, who are committed to the care of the department of public welfare and whom the state will either attempt to adjust to a more conventional behavior or resort to a useful functioning capacity. It is expected that the building would cost about \$700,000 and that about \$116,000 would be needed to maintain it annually. The new project would care for the large group of young people who come under the care of the department of public welfare for whom no adequate medical facility now exists and who cannot be accommodated by the two state hospitals concerned with mental diseases. It is believed that the proposed diagnostic medical center and its location near the medical school of the state university would assist the state department of public welfare in developing a program of rehabilitation in this class of young people for whom accommodations are not otherwise available.

HAWAII

Industrial Group Changes Name.—The Territorial Association of Plantation Physicians is the name by which the component society of the American Association of Industrial Physicians and Surgeons, heretofore known as the Hawaiian Society of Industrial Physicians and Surgeons, will be known.

Graduate Course.—A postgraduate course was conducted for the Honolulu County Medical Society, January 8-14, in the Mabel Smyth Auditorium, Honolulu. Members of the armed forces stationed in Honolulu presented the program, which included round table discussion on the specialties and a symposium on cardiovascular disease, neuropsychiatry, cancer and diseases of the chest.

Hawaii's Medical Service Plan.—A program of medical and hospital service has been functioning in Honolulu under the auspices of the Honolulu County Medical Society and now has a participating membership of nearly 10,000 and is pointed in a direction of complete coverage. Members of the Territorial Medical Association of Hawaii are considering expansion of the plan, currently restricted to the island of Oahu, throughout the territory. Mr. Reginald W. Carter, general manager of the Hawaii Medical Service Association which operates the Honolulu Medical and Hospital Plan, is traveling throughout the United States visiting various installations which deal with medical and hospital care. His tour included several days at the headquarters of the American Medical Association studying the program of the Council on Medical Service and Public Relations. Information concerning the Hawaii plan, which was established in 1938, may be obtained by addressing Mr. Carter at Room 417, Hawaiian Trust Building, Honolulu.

GENERAL

Society News.—At a special meeting of the board of trustees of the United States Pharmacopoeial Convention Robert L. Swain, Sc.D., New York, was elected chairman to fill the vacancy caused by the recent death of former chairman Evan-der F. Kelly, Sc.D. Dr. Swain was elected a member of the board in 1936 and was reelected by the convention at its 1940 meeting in Washington, D. C.

Meetings Postponed.—At a meeting of the council of the American Psychiatric Association in Chicago, February 26-27, it was voted to postpone the annual session of the association, scheduled to be held in Chicago May 21-24, until August 26. Dr. Winfred Overholser, St. Elizabeths Hospital, Washington 20, D. C., is secretary-treasurer of the American Psychiatric Association.—The executive board of the American Public Health Association has voted to postpone the seventy-fourth annual meeting of the association, scheduled to be held in Chicago the week of September 17.

National Noise Abatement Week.—April 29 to May 5 has been designated National Noise Abatement Week. Again the National Noise Abatement Council will make its annual awards for civic achievements in the abatement of needless noise, consisting of one grand national award and four city population class awards. A gold plaque symbolic of the award will be presented to the grand national award winner, and a silver plaque will be given to the winning city in each population group. These plaques, designed by the eminent sculptor Rene Paul Chambellan, depict Aeneas, hero of Vergil's *Aeneid*, overcoming the many headed monster Cerberus, who guarded

the gates to Hades. In vivid bas-relief Aeneas is portrayed in the act of hurling bits of drugged food into the jaws of the beast, which, according to Vergil's tale, effectually quells Cerberus, who falls asleep.

Information Bulletin on Rehabilitation and Reconditioning.—The Baruch Committee on Physical Medicine is making available without charge a bulletin of information on "War and Postwar Rehabilitation and Reconditioning." The booklet, which may be obtained on request through the committee, 597 Madison Avenue, New York 22, contains up-to-date reports on the recent activities in reconditioning and physical rehabilitation from the Army Reconditioning Division, from the Rehabilitation Division of the Medical Department of the Navy, from the Convalescent Training Division of the Army Air Forces, from the Division of Physical Medicine and Medical Rehabilitation of the Veterans Administration, from the Committee on Convalescence and Rehabilitation of the National Research Council and from the Federal Security Agency concerning the Federal-State Program of Vocational Rehabilitation for the Civilian Disabled. A report concerning the activities of the Baruch Committee appeared in *THE JOURNAL*, Dec. 9, 1944, page 973.

Meetings Canceled.—The National Tuberculosis Association has canceled its annual meeting, which was to be held in Buffalo June 13-15. The *Bulletin* of the National Tuberculosis Association states that the board of directors of the association, the executive committee of the National Conference of Tuberculosis Secretaries and the council of the American Trudeau Society will hold meetings on dates to be announced later. The Federation of American Societies for Experimental Biology has canceled its annual session, which was to be held in Cleveland May 8-10. The federation is composed of the American Physiological Society, American Society of Biological Chemists, American Society for Pharmacology and Experimental Therapeutics, American Society for Experimental Pathology, American Institute of Nutrition and the American Association of Immunologists. The American Society for Clinical Investigation has canceled its annual meeting, which was to have been held in Atlantic City May 7. Dr. Wesley W. Spink, University Hospitals, Minneapolis 14, is the secretary.

Snow Medal Awarded to Merritte W. Ireland.—The presentation of the William Freeman Snow Medal for distinguished service to humanity to Major Gen. Merritte W. Ireland, formerly surgeon general of the U. S. Army, was a feature of the thirty-second annual meeting of the American Social Hygiene Association in Chicago recently. Honorary life memberships in the association were presented to Drs. Bertha M. Shafer, Chicago, director, Illinois Social Hygiene League, and Lieut. Col. Donald H. Williams, chief, division of venereal disease control, National Department of Health and Welfare, Canada. Thomas Parran, surgeon general of the U. S. Public Health Service, addressed a session on "Social Hygiene, the Past Five Years and the Next Five Years." The thirty-second annual session of the American Social Hygiene Association was held in conjunction with the Chicago Conference on Social Hygiene and speakers included:

Dr. C. Walter Clarke, New York, executive director, American Social Hygiene Association, Present and Future Public Health Problems in Social Hygiene.
Henry L. McCarthy, Chicago, director, Region No. VI, Social Security Board, Social Protection Program in Action.
Mrs. Bertha Ashby Hess, chief, bureau of health education, Cleveland Health Department, Responsibility of the High Schools in a Social Hygiene Education Program.
Dr. Herman N. Bundesen, president, Chicago Board of Health, Chicago Rapid Treatment Program.

One session was devoted to "Industry versus Venereal Disease."

FOREIGN

Psychiatrist Shot as Hostage.—Dr. Haakon Sæthre, director of the psychiatric department of the General Hospital in Oslo, was arrested when at work in the hospital a short time after the police general of the Quisling party of Norway, called the Norwegian Heydrich, was machine gunned to death on the street in Oslo by the Norwegian home forces, February 8. Dr. Sæthre was among the prominent members of liberal professions who were arrested and shot or sentenced by the German Staudgericht. According to a communication, Dr. Sæthre was selected as a victim because he was known for his unhesitating patriotism. The tragedy of Dr. Sæthre's death recalls another incident nearly four years ago, the communication stated, when another prominent Norwegian psychiatrist, Dr. Rolf Gjessing, was arrested because he would not accept an inferior Quisling as superintendent of male nurses at his hospital. When Norwegian physicians as a body threatened to strike, the Quislings released Dr. Gjessing.

Deaths in Other Countries

Lord Dawson of Penn, physician to four kings and first Viscount, died March 7 of pneumonia, aged 80. Lord Dawson became physician in ordinary to Edward VII in 1907. He continued in the same post with George V, Edward VII and the present George VI. Although still convalescing from an operation performed a number of months ago he was recently consulted about the health of David Lloyd George, prime minister of Britain in the first world war. He was formerly president of the British Medical Association.

Government Services

Proceedings of Conference on Rheumatic Fever

Proceedings of the national conference on state rheumatic fever programs, held at the Children's Bureau in the fall of 1943, have just been published, and copies are available free on request to the Children's Bureau, U. S. Department of Labor, Washington 25, D. C. The conference, the first of its kind, was called specifically for a pooling of experience in the operation of rheumatic fever control programs by state crippled children's agencies (*THE JOURNAL*, Oct. 30, 1943, p. 578). It was broad in scope, providing an opportunity for a general review of medical, nursing and social problems affecting the rheumatic child. Representatives of many lay and professional groups contributed to the discussion. State rheumatic fever programs are operated by state crippled children's agencies under plans approved by the Children's Bureau and are supported in large part with funds made available under the Social Security Act. The first of these programs was initiated in Oklahoma in 1940. Today state rheumatic fever programs are in effect in nineteen states. Even in these states, however, the problem has scarcely been touched, for services are available in only 239 of the 3,082 counties in the United States and its territories. Only about \$450,000 of federal funds are budgeted for these rheumatic fever programs this fiscal year, a small sum in comparison with the magnitude of the program. The bureau estimates that half a million children in the United States have or are suffering from rheumatic fever.

States Urged to Help in Public Works

Major Gen. Philip B. Fleming, federal works administrator, recently called on the states to assume a greater measure of financial responsibility for the maintenance of schools, hospitals and other public services in war impacted areas. He also directed to their attention the limited amount of Lanham act funds that remain available. In letters to the governors, General Fleming pointed out that many states have treasury surpluses. He also explained that the conditions which made necessary the facilities are likely to persist indefinitely in many areas. The state executives were advised that the Federal Works Agency would cooperate with them and with the local sponsors in working out a program mutually satisfactory and in the best interests of the people as a whole. To date the FWA has allotted \$93,830,767 for maintenance and operation costs of all types of public services, including schools, hospitals, child care and recreation centers and venereal disease rapid treatment hospitals. The allotments for schools totaled \$27,679,799, child care \$42,048,764, venereal hospitals \$12,802,165 and recreation \$6,404,906. Lanham act funds now available do not permit allotments to maintain and operate new facilities except to meet an urgent emergency and are just about sufficient to help keep in operation those already established and still vitally needed. "Federal funds which may be used for these purposes are necessarily limited," General Fleming wrote the governors, "and in view of the fact that many of the states have accumulated treasury surpluses it is my sincere desire that a way may be found whereby the states and their political subdivisions will be able to assume a greater measure of financial responsibility for the maintenance of such facilities, especially since the need is likely to persist in many areas after the authority of the agency to assist is terminated. The wholehearted cooperation which this agency has received from you in the past encourages the hope that together we may arrive at a conclusion mutually satisfactory and in the best interests of the people as a whole." In an earlier letter General Fleming advised the governors of the limited amount of Lanham act funds available for school maintenance and operation. He suggested they recommend increased school appropriations to their legislatures so that the schools might not suffer undue hardship when FWA is forced to reduce, or terminate, contributions. The legislatures in most states convene this year.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 17, 1945.

The Care of Inert Patients During Transit to Base

The care of inert patients during transit to base is a problem ever present in war. The *Army Medical Department Bulletin* points out that prolonged stay in one position on a stretcher is more than uncomfortable; it may be harmful. Inert patients include those who are unconscious or paralyzed by head or spinal injuries and those who are immobilized as a result of chest or buttock wounds. Pressure sores or massive collapse of the lung are the commonest results of prolonged stay in one position; the latter appears to have a higher incidence in battle accidents than in civilian injuries. A patient who is in good condition when he starts his journey by motor ambulance or air may be found on arrival at the base to have rapid breathing and pulse and signs of a collapsed lung. In chest and buttock wounds the collapse usually occurs on the side opposite to the wound because the patient has been lying on the uninjured side so long. To prevent massive collapse of the lung and pressure sores the following precautions should be taken:

1. Before evacuation inert patients who are conscious should be given breathing exercises at regular intervals. This can be conveniently done when sulfonamide compounds are being administered. Whenever possible, inert patients for evacuation to the base should be prominently labeled. "Unable to move. Please alter position during transit."

2. During transit on a stretcher, whether by motor ambulance or by air, inert patients should have their position altered slightly from time to time. Those who cannot help themselves should be placed in the lowest tier of the stretcher racks of the ambulance or plane. Once every hour the attendant should move the patient by gently lifting his pelvis into a new position. For patients with buttock wounds the lift may have to be applied to the upper part of the trunk, or the patient may be slightly rolled by altering the position of his limbs. Such movements transfer pressure to different areas of the skin and are often followed by alteration of breathing and coughing that clears the respiratory passages of mucus.

Before evacuation of patients who are paraplegic from spinal injury, each pressure point on the lower limbs (heels, malleoli, the head of each fibula) should be protected by large pads of wool and a firm bandage. Where possible an air ring should be provided for protection of the sacrum. Frequent slight alterations of the position of the limbs and trunk are essential; otherwise sloughing bed sores are inevitable. In gunshot wounds of the spine, unlike the fracture-dislocation of civil life, the spinal column is virtually intact and movement of the trunk does not produce further damage to the cord. In paraplegic patients care should be taken to ensure that the suprapubic catheter is not disturbed when the patient is moved.

3. On admission to the receiving hospital the inert patient should be promptly examined and a regimen instituted that ensures frequent change of position. Whenever possible, breathing exercises should be part of the routine.

An Industrial Health Service

A committee of the Royal College of Physicians on social and preventive medicine has presented its report on the reform of industrial medicine. As a large majority of citizens spend a third of their working days in factories, offices and other places of business, the report points out, the importance of an industrial health service is evident. An industrial health ser-

vice should be planned boldly without much regard for traditional arrangements. Factory legislation should be extended to smaller industries and nonindustrial undertakings. The industrial health service should be part of the projected national health service. There should be uniform conditions of service and rates of pay. General administration might be mainly delegated to the Ministry of Labor but in special industries could be carried out by such bodies as the Ministry of Fuel and Power, the Ministry of War Transport or the General Post Office. The service should be national in its scope and apply to every variety of employment.

The service should be staffed by medical inspectors, by consultants in industrial medicine and by whole time and part time medical officers with a nonmedical personnel trained for the type of work undertaken. Clinical facilities, including beds for consultants and research workers in industrial medicine, should be provided. The aims should be promotion of the general health of the worker by providing the optimum environmental conditions, by preventing disease and accidents in industry, by taking an appropriate share in rehabilitating the disabled and by educating the workers in preserving health and well being. Research in industrial health should be given every possible encouragement. As the service is comprehensive and national in scope, the family doctor has a vital part to play in it as a part time industrial officer. He should be trained for this function.

Fitting the individual worker for his job will entail inquiry into his physical and mental capacity. The doctor's share in selection and allocation is not restricted to those entering industry but is equally necessary when workers change their occupation, perhaps because of illness. As to rehabilitation, efficient facilities for it require the closest ties between the national health and the industrial service. The final stages of restoration should be carried out at the place of work. For those who wish to take up industrial health as a career, training should be provided based on a broad study of preventive and social medicine in order to avoid too narrow specialization. A special course of instruction in industrial health should be preceded by at least two years of postgraduate experience in medicine, of which not less than one year should be spent in general practice. Whether a special diploma in industrial health is instituted or not there should be a well designed course of training of one year's duration. As to research work, up to the war the Industrial Health Research Board carried out pioneer work which promised great benefits to industrial organizations. After the war there will be increasing need for research in both field and laboratory. At present teaching schools are considering the creation of departments and chairs in industrial health.

British Medical Officer Honored by President Roosevelt

As chief surgeon of the allied forces Major General Sir Ernest Marshall Cowell planned and executed the medical services for the allied landings and subsequent operations in North Africa, Sicily and Italy. For exceptionally meritorious conduct in the performance of outstanding services from September 1942 to March 1944 as director of medical services, Allied Headquarters, Mediterranean Theater, he was decorated with the Legion of Merit by General Eisenhower, Allied Supreme Commander. The decoration was awarded by President Roosevelt. According to the citation, "by personal supervision and inspection of the forward areas, and by effecting new techniques whenever necessary to meet the constantly changing situation, he welded together medical services of the American and British forces and produced a highly successful organization, which resulted in the saving of many lives and contributed to the well being and comfort of the sick and wounded of both nations."

PALESTINE

(From Our Regular Correspondent)

JERUSALEM, Feb. 2, 1945.

Endocrine Allergy

In a lecture held at the Jewish Medical Association in Jerusalem, Zoudek and Bromberg submitted the results their research in the field of endocrine allergy had yielded during recent years. It is generally accepted that allergic manifestations are elicited by exogenic allergens. But there are evidences that allergic reactions may also occur following the action of endogenous allergens produced within the organism by endocrine glands. Certain pathologic disturbances are due to this peculiar reactivity of the organism to the action of its hormones and of the products of their metabolism. The name of "endocrine allergy" has been proposed for these conditions. It has been shown that this kind of allergic reactions may arise not only following the action of endogenous glandular secretions of protein nature as thyroxin, insulin and chorionic gonadotropin but also as the result of allergenic activity of steroid hormones (estradiol, progesterone, testosterone, desoxycorticosterone) and their products of metabolism (estrone, pregnandiol, androstosterone). The following clinical observations point to the existence of endocrine allergy:

(a) In certain cases injections of estrone, estradiol benzoate or other steroid hormones induce general symptoms, such as nausea, vomiting, fever, diarrhea and urticaria.

(b) Certain allergic diseases (asthma, angioneurotic edema, urticaria, migraine) take sometimes a particularly severe form during the premenstrual phase in which production of the follicle and corpus luteum hormones reach maximal levels.

(c) In some cases of pruritus vulvae, administration of estrogenic substance gives relief only if given in low dosage; large doses may cause severe exacerbation of the disease. The successful treatment of pruritus vulvae by percutaneous application of small quantities of sex hormones (Zoudek) is plausibly explained as a consequence of desensitization through continuous absorption of hormone in regular doses.

In an investigation made on a series of 32 healthy, regularly menstruating women and 150 patients complaining of various disorders suspected of being conditioned by endocrine allergy, numerous facts supporting the hypothesis of sensitivity to endogenous secretions have been established. The latter may be thus summarized:

1. The skin reagins to the steroid hormones have been demonstrated by the specific positive reaction which appears twenty-four to forty-eight hours after intracutaneous injection of a minimal quantity of hormone; analogous conditions of sensitivity to protein and insulin may occur. The positive skin reactions to hormones have been observed in women suffering from various disorders related to menstruation or the menopause but never in healthy subjects.

2. In patients sensitive to steroid hormone it is possible to reactivate the formerly positive skin reaction by subcutaneous injection of the hormone in question in another site ("recurrent reaction").

3. In some patients in whom the allergic symptoms appear in the premenstruum, the positive cutaneous reaction may recur for several months in the premenstrual period. This "retarded reaction," which appears at the same time coincident with the attainment of a maximum level in the body by the allergenic hormone, is further proof of the existence of endocrine allergy.

4. The passive transfer test (positive Prausnitz-Kuestner test) has been obtained on many occasions with serum of patients sensitive to hormones; this observation points to the presence of allergic antibodies circulating in the blood of these patients.

5. Injections of minimal quantities of glandular products into persons who have not previously received endocrine treatment may cause serious general symptoms.

6. Personal and family histories of allergy and high blood eosinophilia are frequent in persons with positive cutaneous tests.

7. Specific desensitization by injections of gradually increasing doses of allergenic hormone gave favorable clinical results in various disturbances related to the menstrual cycle or the menopause; it is a proof that the disturbances in question have been caused by endocrine allergy.

The results of this investigation lead to the assumption that in patients showing allergic manifestations attention should be paid not only to the exogenic allergens but also to the possibility of sensitivity to endogenous hormones. These facts should be kept in mind in the study of various clinical pictures and their differential diagnosis. It has been shown that certain disturbances related to the menstrual cycle, as premenstrual tension, migraine, urticaria, pruritus vulvae, premenstrual fever and certain ocular manifestations (superficial keratitis), often result from allergy to endogenous hormones. On the other hand, various complaints appearing at the menopause as migraine and pruritus vulvae may also be due to endocrine allergy. Certain cases of asthma, vasomotor rhinitis and angioneurotic edema presenting a particularly severe course during the premenstrual phase or the menopause may also be caused by this peculiar kind of allergic sensitivity. The fact that the organism may react allergically to secretions of its own endocrine glands throws a new light on the study of allergy.

Marriages

GEORGE ALFRED HIGGINS JR., Albuquerque, N. M., to Miss Isabelle Jeannette Heck of Chicago in Rochester, Minn., January 23.

RICHARD CAMPBELL CLAY, Birmingham, Ala., to Miss Madeline Murray of Whalesville, Md., in Baltimore, December 30.

GRANVILLE ALLEN LAWRENCE JR., Philadelphia, to Miss Rebecca Belle Patterson of Hollidaysburg, Pa., November 17.

ANTHONY M. KURLAND, Denver, to Miss Lucille Elizabeth Theraux of Philadelphia in Fairfield, Ohio, December 1.

WILLIAM NYE CORPENING, Houston, Texas, to Miss Avis Simons Kiser, formerly of Laurens, S. C., December 23.

HENRY BERNARD STRYKER JR., Englewood, N. J., to Miss Carolyn Roberta Guy of Glens Falls, N. Y., December 2.

GUS EVANS FORBES JR., Greenville, N. C., to Miss Nancy Burnette Armistead of South Hill, Va., November 25.

JOHN DAVID FOLSON to Miss Ruth Corinne Ludwick, both of Lincoln, Neb., in Staten Island, N. Y., January 20.

WALTER MACINTIRE WHITEHOUSE, Ypsilanti, Mich., to Miss Barbara Norton McIntyre of Grand Rapids recently.

KEARNS REID THOMPSON JR., Durham, N. C., to Miss Sara Elizabeth Bell of Dillon, S. C., December 30.

ARTHUR RHETT GUNTER, Rock Hill, S. C., to Miss Emily Sims Jennings of Spartanburg, December 16.

CHARLES ROBERT WATSON to Miss Pauline Lindsey Davis, both of Little Rock, Ark., December 26.

JOHN W. DONNELLY, Hudson, Iowa, to Mrs. Ruth Lowell of Fort Lauderdale, Fla., October 1.

RAYMOND ROBERT SUSKIND to Miss Ida Blanche Richardson, both of New York, December 27.

SAMUEL C. MURPHY to Miss Hazel Jamison Melick, both of Warsaw, Ind., January 9.

HUGO J. EHRENFELD to Miss Eve Emerson Pauker, both of New York, January 27.

HAROLD M. GOODMAN to Miss Harriett Lewis, both of Richmond, Va., December 3.

THOMAS V. BANKS to Miss Jean Sorrell, both of Dyersburg, Tenn., January 7.

Deaths

Sara Josephine Baker ☉ Bellemead, N. J.; Woman's Medical College of the New York Infirmary for Women and Children, New York, 1898; in 1901 joined the New York City Department of Health as a school medical inspector; six years later appointed assistant to the health commissioner, serving until 1908, when she became director of the newly organized bureau of child hygiene of the New York City Department of Health, which was the first of its kind under governmental control and which was eventually copied by some thirty-five states; resigned from that position in 1923; for many years lecturer on child hygiene at Columbia and New York universities; formerly consultant in child hygiene to the U. S. Public Health Service and a member of the Health Committee of the League of Nations; consultant to the Children's Bureau, U. S. Department of Labor; member of the New Jersey State Board of Health; member of the medical board of the Maternity Center Association, New York City; member of the board and consulting pediatrician to the Clinton (N. J.) Reformatory for Women; fellow of the New York Academy of Medicine and the American Public Health Association; member of the Medical Society of the State of New York; honorary member of the Medical Society of the State of New Jersey and the Somerset County Medical Society; associate member of the American Academy of Pediatrics; member and past president of the Medical Women's National Association; past president of the American Child Hygiene Association; honorary president of the Children's Welfare Federation of New York City; member of the board of trustees of the New York Infirmary for Women and Children; in 1917 received the degree of doctor of public health from the Bellevue Hospital Medical College, New York; lectured extensively in this country and in Europe; in the years 1939 and 1940, the American Woman's Suffrage Association and the General Federation of Women's Clubs (in connection with their fiftieth anniversaries) and the Congress of Women of the World's Fair bestowed on her recognition of her achievement in the field of public health as one of the outstanding fifty women of this country; author of "Healthy Mothers," "Healthy Babies," "Healthy Children," "Child Hygiene," and an autobiography, "Fighting for Life"; died in New York Hospital February 22, aged 71.

Ellice Murdoch Alger ☉ New York; University of Vermont College of Medicine, Burlington, 1893; specialist certified by the American Board of Ophthalmology; for many years professor of ophthalmology and clinical ophthalmology at the New York Post-Graduate Medical School, Columbia University, and surgeon at its hospital; at one time taught at his alma mater; one of the founders in 1915 of the National Society for the Prevention of Blindness, serving continuously on its board of directors until his death; at one time a member of the subcommittee for the prevention of blindness organized by the New York Association for the Blind; in 1938 the Association for Research in Ophthalmology, of which he was a member, in cooperation with the St. Louis Society for the Blind, awarded him the Leslie Dana Gold Medal for "outstanding achievements in the prevention of blindness and the conservation of vision"; member of the American Ophthalmological Society and the New York Ophthalmological Society, of which he was past president; served as chairman of the section of ophthalmology of the New York Academy of Medicine; fellow of the American College of Surgeons; author of "Refraction and Motility of Eye"; died in the New York Post-Graduate Hospital February 18, aged 74.

Byron McBride Caples ☉ Waukesha, Wis.; Willamette University Medical Department, Salem, 1889; Rush Medical College, Chicago, 1891; member of the House of Delegates of the American Medical Association in 1905, 1906, 1907, 1908 and 1911; past president of the State Medical Society of Wisconsin; twice president of the Waukesha County Medical Society and in 1943, in recognition of his completion of fifty years in the practice of medicine, awarded honorary life membership in the society; in 1924 president of the Milwaukee Neuro-Psychiatric Society; member of the American Psychiatric Association, Milwaukee Academy of Medicine, Medical Veterans of the World War, National Geographic Society and State Historical Society of Wisconsin as well as the Waukesha Chamber of Commerce; during World War I served as chairman of the medical advisory board of Waukesha County, also serving on the Waukesha council of defense and as psycho-neurologist on the draft board; in 1898 established the Waukesha Springs Sanitarium and operated it until 1943, when the largest building on the property was sold to Carroll College, named Caples Hall in his honor; died in the Waukesha Memorial Hospital January 18, aged 84.

Robert Ratze Brown ☉ Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1914; assistant professor of clinical orthopedic surgery at his alma mater; a member of the board of directors and past president of the Nashville Academy of Medicine; past president of the Davidson County Medical Society; member of the American Proctologic Society, Clinical Orthopedic Society, Southern Medical Association and the American Academy of Orthopaedic Surgeons; specialist certified by the American Board of Orthopaedic Surgery; a captain with the Vanderbilt medical unit attached to the First Division during World War I; on the staffs of the Vanderbilt, St. Thomas, Protestant and Nashville General hospitals; member of the Tennessee State Crippled Children Commission and had been active in the medical work of the Junior League Home for Crippled Children for many years; died February 6, aged 54, of coronary thrombosis.

Shenton Stanley King ☉ New Rochelle, N. Y.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1905; member of the American Psychiatric Association and the American Orthopsychiatric Association; fellow of the Royal Institute of Public Health, London; received many decorations for his services during World War I; since 1933 a member of the bureau of child guidance, department of family and child welfare of Westchester County; served on the staff of the Grasslands Hospital, Valhalla; received the doctor of public health degree from Johns Hopkins University School of Hygiene and Public Health in Baltimore in 1924; died in the New Rochelle Hospital January 4, aged 66, of cerebral hemorrhage.

James Harold Mathews ☉ Seattle; University of Michigan Medical School, Ann Arbor, 1922; president-elect of the King County Medical Society; formerly instructor of otolaryngology at his alma mater; specialist certified by the American Board of Otolaryngology; member of the Pacific Coast Oto-Ophthalmological Society; served as president of the Puget Sound Eye and Ear Society; interned at the Harper Hospital in Detroit; president of the Seattle Eye, Ear, Nose and Throat Infirmary; on the attending staff of the Swedish Hospital; consultant on the staffs of the Children's Orthopedic Hospital and the Providence Hospital, where he died January 30, aged 49, of heart block during cholecystectomy and aortic insufficiency.

William Harry Barnes ☉ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1912; specialist certified by the American Board of Otolaryngology; served as lecturer on bronchoscopy at Howard University and consulting bronchoscopist at Freedmen's Hospital, both in Washington, D. C.; assistant surgeon in the U. S. Public Health Service during World War I; member and assistant treasurer of the Philadelphia Housing Authority; on the staffs of the Jefferson Hospital and the Mercy Hospital, where he died January 15, aged 57, of transverse lesion of the cord incurred from an injury.

Anthony Barone, Boston; Middlesex College of Medicine and Surgery, Cambridge, 1921; member of the American Medical Association; also a dentist and pharmacist; died December 8, aged 48, of bronchopneumonia.

Frank Burr Combs, Chicago; Northwestern University Medical School, Chicago, 1905; member of the American Medical Association; died in the Albert Merritt Billings Hospital January 20, aged 65, of coronary thrombosis.

Charles H. Donoho, Portland, Tenn.; University of Nashville Medical Department, 1899; member of the American Medical Association; died in St. Thomas Hospital, Nashville, December 2, aged 71.

Albert George Kreimer, Cincinnati; University of Cincinnati College of Medicine, 1922; member of the American Medical Association; died in the Mercy Hospital December 22, aged 50.

William John Reed, Peoria, Ill.; University of Illinois College of Medicine, Chicago, 1934; died in Los Angeles December 9, aged 35.

Eugene Clyde Underwood Jr., Louisville, Ky.; Hospital College of Medicine, Louisville, 1904; examiner for the Reynolds Research Corporation; served on the staff of SS Mary and Elizabeth Hospital, where he died December 30, aged 62, of coronary thrombosis.

William R. Washburn, Fort Bayard, N. M.; St. Louis University School of Medicine, 1904; member of the American Medical Association; served during World War I; served on the staff of the Veterans Administration Facility, where he died December 28, aged 68, of coronary arteriosclerotic heart disease.

Frank W. Watson, Union City, Tenn.; Missouri Medical College, St. Louis, 1885; past president and secretary of the Obion County Medical Society; served on the school board; died in the Union City Clinic January 2, aged 81, of pneumonia.

DIED WHILE IN MILITARY SERVICE

Patrick Sarsfield Haran, Brooklyn; Long Island College Hospital, Brooklyn, 1923; member of the American Medical Association; served on the staffs of the Kings County, Holy Family and Midwood hospitals; commissioned a captain in the medical corps, Army of the United States, on Aug. 18, 1942; died in the Regional Hospital, Fort Jay, N. Y., Dec. 15, 1944, aged 46, of epidemic infectious hepatitis and bronchopneumonia.

Edward Thorne Harrison, High Point, N. C.; University of Virginia Department of Medicine, Charlottesville, 1926; fellow of the American College of Surgeons; member of the American Medical Association; interned at the Battle Creek Hospital, Battle Creek, Iowa, Jamaica Hospital, Richmond Hill, N. Y., Chesapeake and Ohio Railway Hospital, Clifton Forge, Va., and the Willard Parker Hospital in New York; member of the surgical staff of the Burrus Memorial Hospital; commissioned a major in the medical corps, Army of the United States, on July 18, 1942; died in the Moore General Hospital, Swannanoa, Dec. 18, 1944, aged 46, of aplastic anemia.

John Milton Hill @ Pittsburgh; University of Pittsburgh School of Medicine, 1932; specialist certified by the American Board of Radiology, Inc.; member of the Radiological Society of North America, Inc., and the American College of Radiology; served on the staffs of the Passavant, St. John's General, Presbyterian and Woman's hospitals; assistant radiologist at the Falk Clinic; commissioned a major in the medical reserve corps of the U. S. Army on April 13, 1942; began active duty on July 15, 1942; stationed at Fort Lewis, Wash., with the Pitt Medical Unit until December 1943, when he was sent to Australia with Base Hospital unit number 27; promoted to lieutenant colonel; died in the Walter Reed General Hospital, Washington, D. C., November 13, aged 46, following an operation for brain tumor.

George Forster Hilles, Cleveland Heights, Ohio; Western Reserve University School of Medicine, Cleveland, 1939; interned at St. Vincent Charity Hospital and served a residency in medicine at the Evangelical Deaconess Hospital in Cleveland; commissioned a lieutenant in the medical reserve corps of the U. S. Army, June 14, 1939; began active duty in the Army of the United States on May 5, 1941; later promoted to captain; after serving nineteen months in Panama, returned to the United States in April 1943; subsequently went to North Africa and Italy, where he was killed in an airplane accident Aug. 23, 1944, aged 30.

James Willard McMurray, Williston, Fla.; Tulane University of Louisiana School of Medicine, New Orleans, 1934; member of the American Medical Association; health officer of Gilchrist-Levy Counties Health Department; formerly district health officer of West Florida with headquarters at Marianna, director of the Broward County Health unit with headquarters at Fort Lauderdale, and the Gulf-Calhoun-Franklin unit with headquarters at Apalachicola; commissioned a first lieutenant, medical corps, Army of the United States, on March 3, 1944; died in the Billings General Hospital, Fort Benjamin Harrison, Ind., Dec. 14, 1944, aged 38, of coronary occlusion.

Oscar Frederick Nolan @ San Francisco; Baylor University College of Medicine, Dallas, 1927; specialist certified by the American Board of Urology, Inc.; member of the Pacific Association of Railway Surgeons and the Western Branch of the American Urological Association; urologist for the Southern Pacific Hospital and St. Francis Hospital; consulting urologist at the French Hospital; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on May 30, 1927; began active duty as a captain in the Army of the United States on July 27, 1941, stationed at the Letterman General Hospital, where he was chief of the urologic service; later promoted to major and lieutenant colonel; accidentally drowned in the Abbotts Lagoon, Marin County, while duck hunting, Nov. 12, 1944, aged 44.

Joe Holmes Price, Poplarville, Miss.; University of Oklahoma School of Medicine, Oklahoma City, 1928; served during World War I; formerly on the staffs of

various Veterans Administration facilities; at one time state district health superintendent at McLeansboro, Ill.; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on Feb. 12, 1930; began active duty as a captain in the Army of the United States on July 22, 1942; died 5 miles East of Baton Rouge, La., Dec. 4, 1944, aged 46, of injuries received in an automobile accident.

Raphael Raymond Sprafka @ Chicago; Northwestern University Medical School, Chicago, 1937; interned at the Hospital of St. Anthony de Padua; diplomate of the National Board of Medical Examiners; commissioned a first lieutenant in the medical corps, Army of the United States, on Aug. 3, 1942; promoted to captain on Oct. 5, 1943; died in Beauvais Tille, France, Dec. 4, 1944, aged 33, of multiple fractures incurred in an airplane crash.

Judson Ludwell Taylor @ Commander (MC), U. S. Navy, retired, Houston, Texas; University of Texas School of Medicine, Galveston, 1903; professor and chairman of the department of surgery at Baylor University College of Medicine; served as professor of general and oral surgery at the Texas Dental College from 1931 to 1943, when he became supervisor of hospital instruction at the University of Texas School of Dentistry, from which position he resigned to accept an appointment by the governor of Texas to the board of regents of the University of Texas, Nov. 15, 1944; served as lecturer in surgery at his alma mater; president of the State Medical Association of Texas, 1942-1943, and councilor of the Ninth District from 1939 to 1941; president of the Harris County Medical Society in 1934; founder member of the American Board of Surgery; member of the Texas Surgical Society, American Association for the Surgery of Trauma, Association of Military Surgeons of the United States, History of Science Society and the Southern Medical Association; fellow of the American College of Surgeons; served as trustee of the Houston Academy of Medicine; chief surgeon at the Southern Pacific Hospital; consulting surgeon, Jefferson Davis, Memorial and the Methodist hospitals; surgeon in chief, Hermann Hospital; appointed chief of staff of the Arabia Temple's Crippled Children's Hospital in 1922, becoming chief of staff emeritus in 1930; recently surgeon to the M. D. Anderson Hospital for Cancer Research, president of the Maternal Health Center from 1936 to 1943, medical director of the Birth Control League of Texas from 1938 to 1941 and the Texas League for Planned Parenthood from 1941 to 1943; a member of the executive committee, Harris County chapter, National Foundation for Infantile Paralysis, since 1943; served as member of the board of directors of the Union National Bank; appointed assistant surgeon in the U. S. Navy on Jan. 17, 1904 and retired on Feb. 19, 1912 for incapacity resulting from an incident of service; awarded the Victory Medal for his services during World War I, for which he had been recalled to active duty as a lieutenant commander in the U. S. Navy; in June 1942 recalled to active duty with rank of lieutenant commander; on Sept. 22, 1943 was given a spot promotion to the rank of commander, medical corps, U. S. Navy, retired, the rank held at the time of his death; senior medical officer in the office of naval officer procurement; died Nov. 28, 1944, aged 63, of coronary occlusion.

Charles Edward Walker Jr., Denver; Harvard Medical School, Boston, 1932; member of the American Medical Association; interned at St. Luke's Hospital, Denver; served a residency in ophthalmology at the Massachusetts Eye and Ear Infirmary, Boston; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; specialist certified by the American Board of Ophthalmology; formerly instructor in ophthalmology at the University of Colorado School of Medicine; served on the staffs of St. Luke's, Colorado General, Denver General, St. Joseph's and Presbyterian hospitals; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on June 23, 1932; began active duty as a captain on Feb. 6, 1941; later promoted to major and lieutenant colonel; died in Paris, France, Nov. 22, 1944, aged 41, of coronary occlusion.

Correspondence

WILL PENICILLIN BE USED INDISCRIMINATELY?

To the Editor:—Penicillin will soon be available for general civilian use. It is understood that commercial firms will soon have sufficient supplies to market it through their usual channels and that it will soon reach the local drugstore. There it will almost certainly be available to the general practitioner on much the same basis as any other biologic product. While still expensive, its price will not be prohibitive. Its use will in all likelihood be widespread, both because of its remarkable efficacy and because of the magic of its name to doctor and public alike. Further, the recent announcement by Libby (*Science*, February 16) that penicillin in cottonseed oil solution enclosed in gelatin capsules has been satisfactorily administered by mouth to human beings appears to herald even more extensive use of penicillin and its related compounds.

It would seem that now is the time to take proper safeguards against their indiscriminate use. The proper patterns, set now, might well avoid the tragedies that accompanied the introduction of the sulfonamide drugs and the waste that accompanied the introduction of purified vitamin preparations.

Time alone will tell what the abuses of penicillin are to be. Its parenteral administration has resulted in an infrequent but definite number of reactions such as urticaria (see Report of the Committee on Chemotherapeutic and Other Agents of the National Research Council in *THE JOURNAL*, Aug. 28, 1943, page 1217, and other reports), thrombophlebitis and even contact dermatitis (Pyle, H. D., and Ratner, Herbert, *ibid.*, July 29, 1944, p. 903). Penicillin may be harmful in acute rheumatic fever (Foster, F. P., and others, Sept. 30, 1944, p. 281) and penicillin resistant strains may develop (Virulence of Penicillin Resistant Bacteria, editorial, Aug. 12, 1944, p. 1042). It is not yet fully known how many of the reactions described were due to impurities in the penicillin preparations then in use, nor is there much information about the toxic reactions, or their lack of them, with penicillin taken by mouth in a vehicle suitable for its ultimate absorption. Penicillin so far appears to be a far safer drug than the sulfonamides, and its indiscriminate use might actually be accompanied by fewer reactions than with the current widespread consumption of aspirin or by less economic waste than now accompanies the indiscriminate use of purified vitamins.

Perhaps the greatest danger of the indiscriminate use of penicillin is of another sort, namely the development of a sense of false security. Penicillin is of no use in many diseases, and in others there is danger from inadequate dosage. For example, it is not hard to visualize that a patient with a chancre would hear that penicillin cures syphilis, would get hold of some, take it (or have it administered) in inadequate dosage, see his chancre disappear, feel that he has been cured of the disease, and then develop cerebrospinal or cardiovascular syphilis many years hence. Numerous other examples can be imagined, and some have probably already occurred.

Nor does it appear unlikely that a period of commercial exploitation of penicillin will soon set in. It is not at all unlikely that the "patent medicine" manufacturers will soon get hold of the drug and we may soon have intense salesmanship of penicillin chewing gum, penicillin cough drops and penicillin mouth wash, not to mention penicillin skin cream or even penicillin laxatives. Perhaps such mild unleashings of the imagination will prove to be too conservative.

It is certainly too early to know yet just how the matter will develop. It would appear to be none too early, however, to reassure ourselves of at least the following:

1. That adequate research will be undertaken, and maintained, to ascertain the best forms of penicillin and related compounds for therapeutic use, their indications and contraindications, their best routes of administration and their toxic reactions, both direct and indirect.
2. That adequate education of the doctor, the druggist and the public will be carried on to assure the proper use (and restraint from use) of penicillin.
3. That proper steps will be taken by professional organizations, particularly the medical and pharmaceutical associations, to prevent possible abuses of penicillin and to assure its availability where needed.
4. That the drug industry will take the necessary steps to foresee and prevent, mainly through voluntary discipline, possible abuses and maldistribution.
5. That the government will not relax its controls until there is evidence that to do so would not lead to shortages in cases in which penicillin is necessary or, contrarilywise, to a riot of commercialized penicillinization of our population.

Some of the points of view in this communication may be mistaken, especially since I am no longer intimately associated with work on penicillin (my former contact was outlined in a previous communication in *THE JOURNAL*, April 22, 1944, p. 1219). There are quite clearly dangers from the failure to use penicillin in disease which it alone will cure. There are also dangers of too stringent controls on its use. These are not discussed here, since the opposite factors appear to need more emphasis now. It would appear that full discussion of this question, perhaps mainly in the columns of *THE JOURNAL*, would be of considerable importance in avoiding mistakes which might prove tragic as penicillin becomes more readily available. Penicillin has got off to a good start under the guidance of the O. S. R. D., the National Research Council and the W. P. B. It would be sad if its future was less wholesome.

LESLIE A. FALK, 1st Lieutenant, M. C., A. U. S.

To the Editor:—The public press announces a wide range of applications of penicillin in preparation for release to laymen after March 15. Penicillin lozenges, chewing gum and dental paste are listed with penicillin vaginal jelly. Further, it is stated that cosmetic manufacturers are studying penicillin with an eye toward including penicillin in face creams, shaving pastes and lotions and similar products.

What measures, if any, have been taken to control the self administration of penicillin in the vehicles listed? Has any official representation been made to the Food, Drug and Cosmetic Administration regarding need for regulation? Has any state or municipality amended its sanitary code or pharmacy laws to include penicillin? Has any official educational effort been initiated to apprise the potential customers of penicillin toothpaste, penicillin dental cream or penicillin chewing gum regarding the effective time-dose factors for effective utilization of the drug? Inadequate dosage is now known to mask the symptoms of syphilis when administered for gonorrhea. It is not too much to expect that partial indiscriminate dosage of penicillin through self administration by throat lozenges, chewing gum, shaving cream and vaginal jellies will produce other examples to the detriment of the sick and the formation of a large army of infection carriers.

The time is now to make the proper moves—now while penicillin is still restricted in distribution.

HERMAN GOODMAN, M.D., New York.

SULFADIAZINE IN PREVENTION
OF MENINGITIS

To the Editor:—It may be of interest, particularly to physicians in mental hospitals, to be informed of a situation which developed at this institution, and the procedure adopted.

On Nov. 12, 1944 a man aged 33 whose mental diagnosis was psychosis with organic changes of the central nervous system, paralysis agitans, was given a clinical diagnosis of cerebrospinal meningococcic meningitis, which was directly confirmed by laboratory examinations. Penicillin was given intrathecally, with definite improvement manifest the following day, and he made a prompt and uncomplicated recovery, receiving two subsequent doses of penicillin.

The point of interest is this: The patient was located in a very crowded ward. It seemed inevitable that many of the 400 patients and personnel in this ward had been exposed. Following the technic described in an article by Lieut. Col. Joseph F. Painton, M. C., U. S. Army, published in the October 1944 issue of the *Military Surgeon* on page 267, all 400 received 2 Gm. of sulfadiazine by mouth, followed in six hours by a second dose of 2 Gm. and a third dose of 1 Gm. given twelve hours after the second dose. No further cases developed, and no ill effects were observed from these prophylactic doses.

The apparent results of this procedure would appear to be significant and worth trying in institutions where overcrowding is as serious as it is in many instances today.

CHARLES A. ZELLER, M.D., Philadelphia.

Superintendent, Philadelphia State Hospital.

TREATMENT OF HYPERTHYROIDISM
WITH THIOURACIL

To the Editor:—In a recent editorial (*THE JOURNAL*, February 10, p. 334) commenting on British experience in the treatment of hyperthyroidism with thiouracil as reported by Nussey in the *British Medical Journal*, Dec. 9, 1944, it is remarked that this author has apparently presented a safe basis for continued administration of thiouracil. It is suggested that 0.6 Gm. daily of thiouracil be administered daily for three to five weeks with gradual reduction thereafter to the minimal effective dose. Adequate supervision of the patient is urged without definition of this phrase. No mention is made of any toxic reactions.

Analysis of Nussey's article shows that there were 27 patients treated for periods varying from three weeks to twelve months with dosages ranging from 0.05 to 0.6 Gm. daily. Observations included leukocyte counts at intervals of one to several months. Among the 27 patients there were 4 with skin eruptions. Seven of the 27 patients exhibited either neutropenia or leukopenia during treatment. It is significant that many of the low counts occurred after the basal metabolic rate had become normal. The author himself notes that "consistently low figures were seen" in 2 cases. No serious neutropenic reactions occurred in this series, but in almost all published series at least one severe neutropenic or agranulocytic reaction has been observed, occasionally with fatality. Our own experience with the use of thiouracil in the treatment of toxic goiter has confirmed these findings. Those who employ thiouracil should "adequately supervise" its administration by performing leukocyte counts at least three times weekly, with differential counts whenever the total count drops below 5,000 per cubic millimeter. In addition, our experience, as well as that of others, has demonstrated the importance of frequent clinical observation with respect to skin eruptions, pharyngitis, fever and jaundice. Moreover, there is considerable evidence that the dosage-time factor is not of determining significance in the development of toxic reactions to the drug.

SAMUEL L. GARGILL, M.D.

MARK FALCON LESSES, M.D.

Boston.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS
EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in *THE JOURNAL*, March 10, page 614.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 26-28. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery 4.

ALASKA: Juneau, March. Sec., Dr. W. M. Whitehead, Box 561, Juneau.

ARIZONA: * Phoenix, April 3-4. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: * *Eclectic*, Little Rock, June 7. Sec., Dr. C. H. Young, 1415 Main St., Little Rock. *Medical*, Little Rock, June 7-8. Sec., Dr. D. L. Owens, 701 Main St., Little Rock.

CALIFORNIA: *Orol.* San Francisco, May 20. *Written*, San Francisco, July 9-12. Sec., Dr. Frederick N. Scalena, 1020 N St., Sacramento 14.

COLORADO: * Denver, April 3-6. Final date for filing application is March 19. Sec., Dr. J. B. Davis, 831 Republic Bldg., Denver.

CONNECTICUT: * Endorsement, March 27. Sec., to the Board, Dr. Creighton Barker, 258 Church St., New Haven.

DELAWARE: *Examination*, Dover, July 10-12. *Reciprocity*, Dover, July 17. Sec., Medical Council of Delaware, Dr. J. S. McDaniel, 239 S. State St., Dover.

FLORIDA: * Jacksonville, June 25-26. Sec., Dr. Harold D. Van Schaick, 2736 S. W. Seventh Ave., Miami 36.

IDAHO: Boise, July 10. Dir., Bureau of Occupational Licenses, Miss Agnes Barnhart, 355 State Capitol Bldg., Boise.

ILLINOIS: Chicago, April 3-5. Superintendent of Registration, Department of Registration and Education, Mr. Philip Harman, Springfield.

INDIANA: Indianapolis, Aug. 28-30. Sec., Board of Medical Registration & Examination, Dr. W. C. Moore, 301 State House, Indianapolis 4.

KENTUCKY: Louisville, June 18-20. Sec., State Board of Health, Dr. Philip E. Blakerby, 620 S. Third St., Louisville 2.

MARYLAND: *Medical*, Baltimore, June 19-20. Sec., Dr. J. T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic*, Baltimore, June 19-20. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MINNESOTA: * Minneapolis, April 17-19. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul 2.

MONTANA: Helena, April 2-4. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

NEW JERSEY: Trenton, June 19-20. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, April 9-10. Sec., Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.

NORTH DAKOTA: Grand Forks, July 3. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: *Endorsement*, Columbus, April. Columbus, June. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * Oklahoma City, June 14-16. Sec., Dr. J. D. Osborn, Jr., Frederick.

PENNSYLVANIA: April 10-13. Act. Sec., Bureau of Professional Licensing, Department of Public Instruction, Mrs. M. G. Steiner, 358 Education Bldg., Harrisburg.

RHODE ISLAND: * Providence, April 5-6. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, June 25-27. Sec., Dr. N. B. Heyward, 1329 Blandina St., Columbia.

SOUTH DAKOTA: * Pierre, July 17-18. Sec., Medical Licensure, State Board of Health, Dr. Gilbert Cottam, State Capitol, Pierre.

TEXAS: Galveston, June 4-6. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas 2.

VERMONT: Burlington, June. Sec., Dr. F. J. Lawless, Richford.

VIRGINIA: * Richmond, June 20-23. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WASHINGTON: * Seattle, July 16-18. Sec., Department of Licenses, Miss Nell Adams, Olympia.

WISCONSIN: * Milwaukee, June 26-28. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

CONNECTICUT: June 9. Address State Board of Healing Arts, 250 Church St., New Haven 10.

DISTRICT OF COLUMBIA: Washington, April 23-24. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington 1.

FLORIDA: DeLand, June 1. Final date for filing application is May 17. Sec., Dr. J. F. Conn, John B. Stetson University, DeLand.

IOWA: Des Moines, April 10. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MICHIGAN: Ann Arbor and Detroit, May 11-12. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

MINNESOTA: Minneapolis, April 3-4. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis 14.

NEBRASKA: Omaha, May 1-2. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln.

OKLAHOMA: Oklahoma City, April 9. Sec., Dr. J. D. Osborn, Jr., Frederick.

SOUTH DAKOTA: Yankton, June 19. Sec., Dr. G. M. Evans, Yankton.

TENNESSEE: Memphis, March 27-28. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

WISCONSIN: Madison, April 7. Sec., Professor R. N. Bauer, 152 W. Wisconsin Ave., Room 834, Milwaukee 3.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1935 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, Cincinnati

27:1339-1466 (Dec.) 1944

- Obstruction of Central Retinal Vein: Clinicohistopathologic Analysis. Bertha A. Klein.—p. 1339.
Bilateral Metastatic Carcinoma of Choroid with X-Ray Therapy to One Eye: Report of Case. F. C. Cordes.—p. 1355.
Notes on Operation for Glaucoma. R. J. Masters.—p. 1371.
Amblyopia in Cases of Reading Failure. T. H. Eames.—p. 1374.
Angiodiathermy of Long Posterior Ciliary Arteries and Its Use in Treatment of Glaucoma. D. Guerry III.—p. 1376.
Production of Lens Sensitivity in Rabbits by Brucella Infection. E. L. Burky.—p. 1394.
Ophthalmoscopic Classification of Hypertensive Diseases. G. E. Clay and M. Baird.—p. 1396.
Keratoconus Posticus Circumscriptus: Case Report. G. Wise.—p. 1406.
Clinical Studies in Angiospasm. I. Givner.—p. 1408.
Frequency of Squint. M. Olive Boyle.—p. 1413.
Essential Requirements for Good Orthoptic Department. D. Dicke.—p. 1417.
Precautions Necessary in Orthoptic Training. L. B. Drye.—p. 1422.

American Journal of Physiology, Baltimore

142:633-757 (Dec.) 1944

- Modified Spontaneous Activity Rhythms in Rats. L. G. Browman.—p. 633.
Relation of Adrenalin and of Carotid Sinus to Hyperglycemia of Shock. E. Mylon, C. W. Cashman and M. C. Wiernitz.—p. 638.
Renal Reabsorptive Mechanism for Inorganic-Phosphate in Normal and Acidotic Dogs. R. F. Pitts and R. S. Alexander.—p. 648.
Spontaneous Activity in Relation to Diet in Albino Rat. Erna A. Smith and R. M. Conger.—p. 663.
Experimental Chronic Hypertension in Rabbit. A. Grollman.—p. 666.
Filtration Across Vascular Wall as a Function of Several Physical Factors. C. Hyman.—p. 671.
Mechanism of Effect of Hyperthyroidism on Cardiac Glycogen. L. E. Moses.—p. 686.
Oxygen Tension of Arterial Blood and Alveolar Air in Normal Human Subjects. J. H. Comroe and R. D. Dripps Jr.—p. 700.
Factors Affecting Determination of Oxygen Capacity, Content and Pressure in Human Arterial Blood. F. J. W. Roughton, R. C. Darling and W. S. Root.—p. 708.
Influence of Dying Gasps, Yawns and Sighs on Blood Pressure and Blood Flow. R. A. Woodbury and B. E. Abreu.—p. 721.
Hemoglobin Concentrations, Red Cell Counts and Erythrocyte Volumes of College Women of North Central States. Margaret A. Ohlson, Dena Cederquist, Eva G. Donelson, Ruth M. Leverton, Gladys K. Lewis, Williamina A. Himwich and May S. Reynolds.—p. 727.
*Affinity of Hemoglobin for Oxygen at Sea Level and at High Altitudes. H. Aste-Salazar and A. Hurtado.—p. 733.
Improved Measurement of Effect of Intravenously Injected Adrenalin on Respiratory Exchange by Colorimetric Determination of Carbon Dioxide in Expired Air and Continuous Graphic Registration of Oxygen Consumption. R. J. Jones and F. R. Griffith Jr.—p. 744.

Affinity of Hemoglobin for Oxygen at Sea Level and at High Altitudes.—Aste-Salazar and Hurtado determined the position of the oxygen-dissociation curve in arterial blood obtained from 17 healthy adult men living at sea level and from 12 Indian native residents of Morocochia (Peru) at an altitude of 4,540 meters (14,890 feet). The same determination was repeated on 12 subjects of the first group within the first two hours after arrival at a high altitude and on 8 men of the second group also within the first two hours after arrival at sea level. The results were compared with those obtained in previous investigations. There seems to be enough evidence to conclude that in human beings, newcomers or residents, at altitudes of about 4,000 meters, or higher, there is no increased affinity of the blood hemoglobin for oxygen. On the contrary, the findings indicate a slight tendency toward a lower affinity,

both at arterial p_n and a standard p_n of 7.40, especially in the native residents. This right shift in the oxygen dissociation curve at high altitude may be interpreted as a favorable compensatory adjustment to the low pressure environment.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

52:571-684 (Dec.) 1944

- Dilatation of Vertebral Canal Associated with Congenital Anomalies of Spinal Cord. A. E. Walker.—p. 571.
Clinical and Roentgen Manifestations of Dissecting Aneurysm of Aorta. M. Ritvo and P. J. Votta.—p. 583.
Prepyloric Diverticulum of Stomach Demonstrable Only by Pressure Roentgenograms: Report of Case. A. F. Hunter.—p. 595.
Megaeosophagus as Cause of Mediastinal Widening. A. Hurst and S. Bassin.—p. 598.
Unusual Type of Inversion of Stomach Associated with Diaphragmatic Eventration and Other Anomalies. D. H. Rosenfeld.—p. 607.
*Lesions of Diaphragm, with Special Reference to Eventration and Report of 3 Cases. R. E. Kinzer and J. C. Cook.—p. 611.
Patent Urachus. R. W. Nichols and R. M. Lowman.—p. 615.
Dyschondroplasia with Hemangiomas (Maffucci's Syndrome): Case Report. G. R. Krause.—p. 620.
Present Value of Roentgenology in Diagnosis of Appendicitis. G. E. Gomez.—p. 624.
Roentgen Diagnosis of Incipient Cancer of Rectum. A. Oppenheimer.—p. 637.
Clinical and Roentgen Aspects of Irradiation Stricture of Rectum and Sigmoid: Its Course and Treatment. Harriet C. McIntosh and J. E. Hutton.—p. 647.

Lesions of Diaphragm.—Kinzer and Cook report 38 cases of diaphragmatic lesions found during the examination of 412,149 chest roentgenograms. Of these only 3 were considered from the roentgenologic standpoint alone to be true diaphragmatic hernias. The first of these was a congenital absence of the posterior portion of the left diaphragm. The stomach, splenic flexure of the colon and several loops of small intestine were herniated into the thoracic cavity. The second was a congenital hernia through the right foramen of Morgagni. The third was a traumatic hernia through the left hemidiaphragm following an inflammatory necrosis. The remaining 35 cases were congenital eventrations of the diaphragm, 30 occurring on the left and 5 on the right side. The authors present roentgenogram of 3 instances of congenital eventration of the right diaphragm

Annals of Internal Medicine, Lancaster, Pa.

21:937-1092 (Dec.) 1944

- *High Fluid Intake in Management of Edema, Especially Cardiac Edema II. Clinical Observations and Data. F. R. Schemm.—p. 937.
Leukocyte Count in Primary Atypical Pneumonia of Undetermined Etiology. O. O. Meyer and Ethel W. Thewlis.—p. 997.
*Use of Benzedrine Sulfate in Obesity. F. K. Allbrecht.—p. 983.
Migraine Headache: Some Clinical Observations on Vascular Mechanism and Its Control. M. Atkinson.—p. 990.
Spontaneous Mediastinal Emphysema. H. Miller.—p. 998.
*Spontaneous Pneumothorax: Report of 3 Unusual Cases. A. Goldman and H. Roth.—p. 1011.
Lupus Erythematosus (Erythematodes) and Ovarian Function: Observations on Possible Relationship, with Report of 6 Cases. E. Rose and D. M. Pillsbury.—p. 1022.

High Fluid Intake in Management of Edema.—Schemm reports clinical studies on patients who had either severe edema or advanced cardiovascular disease. Treatment consisted in giving large amounts of water orally or by vein and a "neutral" diet to insure reduced amounts of salt and sodium and a slight excess of acid ash. Small amounts of acid drugs were usually given to augment the effect of the diet. If the patient's condition permitted, digitalis, mercurial diuretics and even acid drugs were withheld until the edema cleared; thyroid and vitamin B were given only after edema had disappeared; acacia, hypertonic solutions and aminophylline were not given. The diet protein was sometimes reduced from 65 Gm. to 40 Gm. daily until edema had cleared. The observations were made over a period of eight years in 626 separate periods of treatment of 402 cases. Patients with pronounced edema, 94 per cent with gross cardiopathy, tolerated the high fluid intake and the results were better than those formerly obtained with restriction of fluids. It is suggested that the regimen used is physiologically sound and clinically useful in the correction and prevention of the related phenomena of edema, oliguria or anuria and dehydration. Schemm believes that his observations call for a critical reexamination of the accepted clinical practice of fluid restriction in the presence of edema, and for reevaluation of the accepted hypotheses regarding edema formation and congestive heart failure on which this practice is based.

Amphetamine Sulfate in Obesity.—Albrecht reports the results he obtained in treating 300 obese patients. The dosage varied from 10 mg. to 30 mg. daily in divided doses. Patients were started on 5 mg. of amphetamine sulfate twice daily, the drug to be given one-half to one hour before breakfast and the noon meal. Those who have a light breakfast and who eat their evening meal early were given the drug one hour before the noon meal and at 4 p. m. Nearly all who take the drug lose the uncontrollable desire to eat between meals. Patients can be put on a diet varying in calories from 450 to 1,500 with an excellent chance that they will stay on it after the drug is discontinued. This is an easy and rapid way to lose weight, and, under the guidance and supervision of a physician mindful of the contraindications to amphetamine therapy, relatively free from ill effects. The weight loss is not permanent; it is transient in the great majority of instances and returns when the drug is discontinued unless the patient remains on his special diet.

Spontaneous Pneumothorax.—Goldman and Roth report 3 cases of spontaneous pneumothorax observed at the Barnes Hospital, St. Louis. The first patient was a man aged 51 with congenital cystic disease of the lung. Removal of a large amount of air and the injection of the patient's own blood into the pleural cavity resulted in a rapid clinical cure. The second patient, a man aged 40, had complete atelectasis of the upper lobe of the left lung associated with a spontaneous pneumothorax. The pneumothorax had been present for eleven months. The collapsed lung rapidly reexpanded following bronchoscopy, and there was no evidence of disease in the lung following reexpansion. A careful survey of the literature shows only 1 previous report of atelectasis following idiopathic spontaneous pneumothorax. In the third case, one of spontaneous idiopathic hemopneumothorax, recovery was followed by a recurrence. This is the third reported case of recurrence of pneumothorax following spontaneous idiopathic hemopneumothorax. It has frequently been stated that adhesions follow hemopneumothorax and prevent recurrence.

Archives of Ophthalmology, Chicago

32:443-548 (Dec.) 1944

Ocular Symptoms of Psychogenic Origin. C. P. Oberndorf.—p. 443.
Goniosephe Correlates of Responsiveness to Miotics. P. C. Kronfeld.—p. 447.

- *Keratitis Neuroparalytica: Corneal Lesions Following Operations for Trigeminal Neuralgia. C. L. Pannabecker.—p. 456.
Blood Vessels of the Conjunctiva: Studies with High Speed Macro-photography. S. Garner.—p. 464.
Binocular Papilledema in a Case of Torulosis Associated with Hodgkin's Disease. M. Cohen.—p. 477.
Krukenberg Spindle and Its Relation to Annular Pigmented Band on Periphery of the Lens. J. G. Bellows.—p. 480.
Pigmented Lines in Retroiridal Region of Anterior Capsule of Lens. J. G. Bellows.—p. 483.
Dacryocystitis: Transplantation Operation. H. Gifford, Jr.—p. 485.
Chronic Dacryocystitis: Treatment from the Rhinologist's Point of View. L. B. Spake.—p. 488.
Congenital Arterial Aneurysm at the Papilla. F. H. Theodore and W. H. Bonser.—p. 492.
Crystalline Lens in Diabetes Mellitus. J. G. Bellows.—p. 498.

Corneal Lesions Following Operations for Trigeminal Neuralgia.—According to Pannabecker members of the department of neurosurgery of the University Hospital at Ann Arbor, Mich., performed operations for trigeminal neuralgia in 878 cases during the period from 1927 to 1943. Corneal lesions followed in 18 per cent of these. It was found that operations on the lower branches of the trigeminal nerve which do not involve the first, or ophthalmic, branch do not cause damage to the cornea. Corneal anesthesia and lagophthalmos are the important factors in the production of corneal lesions. Combined corneal anesthesia and lagophthalmos give the greatest incidence of corneal lesions (65 per cent). With repeated operations a lesion occurring after the first operation may indicate that a lesion is likely to follow the second. But the incidence of lesions was not definitely greater with repeated operations than with single ones. Operations complicated by the presence of a neoplasm are more likely to be followed by paralysis of the seventh nerve and exposure keratitis. But the incidence of corneal lesions was not greater than with other complete rhizotomies. The prospect of neuroparalytic keratitis developing after complete rhizotomy on both sides is not greater than

after a complete rhizotomy on one side and should not deter one from bilateral operation if severe pain is present. The patient with corneal anesthesia following operation for trigeminal neuralgia is most susceptible to development of neuroparalytic keratitis during the first few months immediately after operation. Treatment of this condition has varied somewhat, but the importance of closure of the lids has always been recognized. A mild antiseptic, such as an aqueous solution of metaphen 1:2,500 or of merthiolate 1:5,000 is prescribed. Isotonic solution of three chlorides is used frequently during the day if there is an indication of insufficient secretion of tears. Closure of the lids has been obtained by various means, such as padding the eye, closing with adhesive tape, use of the Frost suture and tarsorrhaphy. A Frost suture is the best procedure for temporary closing and is useful when the patient is uncooperative or comatose. A tarsorrhaphy is the best procedure for treating neuroparalytic keratitis or exposure keratitis—either a three band or an Elschuig lateral tarsorrhaphy, as indicated. The tarsorrhaphy should be left in place for six months. Cauterization of the punctum was employed in a limited number of cases. Cervical sympathectomy also has been advised. Prophylactic care should be used with any eye which is anesthetic. Temporal shields may be applied to the glasses, and isotonic solution of three chlorides should be used several times daily if the test for lacrimal secretion shows a deficiency of tears. Early tarsorrhaphy should be performed in doubtful or suspected cases. If the tarsorrhaphy is left in place for six months the patient will have been carried through the most critical period of this disease.

Canadian Medical Association Journal, Montreal

51:493-600 (Dec.) 1944

- Bacteriologic and Clinical Observations on Local Treatment of Infections and Fresh Trauma with Penicillin Cream. D. Aekman and F. Smith.—p. 493.
Active Management (Nonoperative) of Cranio cerebral Injuries (Disposition of 180 Canadians and Follow-Up of 132 Patients Returned to Active Service in Canadian Army). E. H. Botterell and K. E. Wilson.—p. 498.
Demerol in Surgery and Obstetrics. C. G. Hori and S. Gold.—p. 509.
Operative Treatment of Injuries to Semilunar Cartilages in Personnel of British Air Forces. D. M. Meekison.—p. 517.
Operation of Industrial Health Service. V. Ward.—p. 521.
Dangers of Incorrect Use of Iodine in Goiter Treatment. R. R. Fitzgerald.—p. 527.
Thyrocardias. A. L. Lockwood.—p. 532.
Sulfonamide Anuria. J. T. MacLean.—p. 536.
Practical Method for Supply of Fresh Milk to Isolated R. C. A. F. Stations. J. W. Tice, F. F. Tisdall and J. F. McCreary.—p. 541.
External Fixation in Fractures. J. W. Ross.—p. 543.
Alteration from Normal to Abnormal PR Interval with Change in Posture. G. W. Manning and C. B. Stewart.—p. 546.
Pneumonia Review of 425 Cases in Montreal, 1941-1943. E. S. Mills and D. McCallum.—p. 547.
*Anterior Poliomyelitis in Pregnancy. M. Blair and C. E. Robertson.—p. 552.
Infectious Mononucleosis. N. McGillivray.—p. 554.

Anterior Poliomyelitis in Pregnancy.—Blair and Robertson present their experience with pregnancy in the presence of maternal poliomyelitis at the Vancouver General Hospital. Six cases were observed over a period of twelve years, during which there were 25,427 deliveries. The first woman, eight months pregnant, died of respiratory paralysis. No Drinker apparatus was available at that time (1931). At necropsy the mother's spinal cord showed the typical changes of poliomyelitis. The fetus was well formed, and the spinal cord showed no pathologic changes. The second woman was admitted during the sixth month of pregnancy with paralysis of the lower limbs. Four weeks later a premature child died several hours after birth. Examination of the infant's spinal cord revealed no abnormalities. The mother's convalescence was uneventful. The third woman was in her sixth week of pregnancy and was admitted with neck stiffness, pain in the lumbar region and thighs and weakness of the extensor muscles of the thighs. She aborted spontaneously six days after admission. Her subsequent course was uneventful. The fourth patient had been pregnant four and one-half months when she entered the hospital complaining of nausea and vomiting, crampy pains in the calves and thighs, and soreness and stiffness of the neck and back. She was discharged after twenty days and later had a normal delivery. The fifth patient was admitted when six months pregnant with headache and pain in the lower legs and back. Both knee

jerk and the right ankle jerk were absent. There was a complete paralysis of the right lower limb and weakness of the left. She was discharged one month later with persisting paralysis of the flexors of the right hip and of the right tibialis anterior muscle. The patient was subsequently delivered, the course of labor being normal, as was the child. The sixth patient was three months pregnant when she developed symptoms of poliomyelitis and had to be placed in a respirator because of complete paralysis of the diaphragm and intercostal muscles. She gradually improved and at the time of her delivery was able to be outside the respirator for eleven of the twenty-four hours daily. She was taken to the labor room in the respirator but was removed from it for the actual delivery. The puerperium was normal. Paresis of the lower extremities and lower torso cleared early and her chief paresis was in the chest, arms and neck. She was conscious of labor pains and was able to help expel the baby over the perineum. The baby is well developed. The mother now walks about. The virus of poliomyelitis has never been demonstrated in the blood stream. If it is present it is never sufficient to invade the fetus. The safety of the child in utero, even in the presence of the most virulent attack compatible with life, is well demonstrated in this series.

Experimental Medicine and Surgery, Brooklyn

2:277-400 (Nov.) 1944

- Transient Intraventricular Conduction Defect. B. Kisch and A. Grishman.—p. 277.
Effect of Penicillin and Choline on Appearance, Growth and Disappearance of Ringe Sarcoma in Rats. H. H. Beard.—p. 286.
Experimental Use of Penicillin and Propamidine in Acute Purulent Arthritis. C. J. Frankel, R. W. Lee and R. B. Houlihan.—p. 290.
Functional Changes of Liver After Experimental Injury: Note on Dog's Tolerance for Glycine. E. C. Loomis and A. J. Quick.—p. 298.
Action of Carcinogenic Compounds and Related Substances on Enzymes. J. Feigenbaum.—p. 304.
Digestibility of Casein Derivatives by Digestive Tract. P. I. Fodor, S. Kuk-Meir and A. Fodor.—p. 311.
Presystolic Murmur Without Auricular Systole: Clue to Genesis of Auricular Sounds. F. M. Groedel and B. Kisch.—p. 319.
Influence of Chest Wall on Heart Sounds. F. M. Groedel and M. Miller.—p. 328.
Studies on Insensible Loss of Water. E. R. Zak and G. C. Leiner.—p. 339.
Physiologic and Pathologic Asynchronism of Function of Heart Chambers. F. M. Groedel.—p. 352.

Journal of Immunology, Baltimore

49:321-391 (Dec.) 1944

- Serologic Types of Shigella Paratyphenteriae (Flexner). A. J. Weil, J. Black and K. Farsetta.—p. 321.
Failure to Sensitize Guinea Pigs Passively with Equine Antisera That Fix Guinea Pig Complement. Edna M. Follensby and S. B. Hooker.—p. 353.
Studies on Technic of Colloid Agglutination: Influence of Certain Qualities of Colloid Particles and of Proportions of Antigen and Colloid on Sensitivity and Specificity of Reaction. P. A. Cavelti.—p. 365.
Neutralization Tests with Certain Neurotropic Viruses: Comparison of Sensitivity of Extraneural and Intracerebral Routes of Inoculation for Detection of Antibodies. E. H. Lennette and H. Koprowski.—p. 375.

Journal of Nat. Cancer Inst., Washington, D. C.

5:151-232 (Dec.) 1944

- Growth and Pathology of Melanoma 591 in Mice of Strains dba, A and C. G. H. Algire.—p. 151.
Role of Heredity in Tumor Development. W. E. Heston.—p. 161.
Attempts to Produce Anaphylaxis in Guinea Pigs with a Polysaccharide from Serratia Marcescens (Bacillus Prodigiosus). F. E. Franke.—p. 173.
Effects of Sublethal Doses of Polysaccharide from Serratia Marcescens (Bacillus Prodigiosus) on Electrocardiogram, Blood Ascorbic Acid and Nonprotein Nitrogen of Dog. F. E. Franke and D. Richert.—p. 179.
Action of Toxic Doses of Polysaccharide from Serratia Marcescens (Bacillus Prodigiosus) on Dog and Guinea Pig. F. E. Franke.—p. 185.
Chemical Treatment of Tumors: N. Reactions of 4 Patients with Advanced Malignant Tumors to Injection of Polysaccharide from Serratia Marcescens Culture Filtrate. A. M. Brues and M. J. Shear.—p. 195.
Degradation of Cystine Peptides by Tissues: I. Exocystine Desulfurase and Dehydropeptidase in Rat Liver Extracts. J. P. Greenstein and Florence M. Leuthardt.—p. 209.
Degradation of Cystine Peptides by Tissues: II. Distribution of Exocystine Desulfurase and Dehydropeptidase in Tissue Extracts of Various Species. Jesse P. Greenstein and Florence M. Leuthardt.—p. 223.
Gastric Function of Dogs After Stimulation with Acetyl-B-Methylcholine Chloride and Histamine Diphosphate. Helen Dyer and Margaret G. Kelly.—p. 227.

Journal of Nervous and Mental Disease, New York

100:555-672 (Dec.) 1944

- Psychiatric Sequelae of Post-Measles Encephalitis (Study of 21 Cases). E. C. Smith and C. E. Trapp.—p. 555.
Prognostic Value of Clinical Findings in Cases Treated with Electric Shock. L. Gold and C. J. Chiarello.—p. 577.
Panoramic Position of Psychiatry (Psychosomatic Medicine, Psychotherapy, Hypnotism, Shock Therapy). A. N. Foxe.—p. 584.
Evaluation of Prognostic Criteria in Schizophrenia. O. Kant.—p. 598.
Dilemma of Etiologic Concepts of Mental and Organic Disease. J. Perlson.—p. 606.

Journal of Pediatrics, St. Louis

25:461-646 (Dec.) 1944

- Metabolic Basis for Individualized Feeding of Infants, Premature and Full Term. H. H. Gordon and S. Z. Levine.—p. 464.
Congenital Malformations Induced by Maternal Nutritional Deficiency. J. Warkany.—p. 476.
Age as Factor in Streptococcosis. G. F. Powers and P. L. Boivent.—p. 481.
*Penicillin: Its Use in Pediatrics. W. E. Herrell and L. J. Kennedy.—p. 505.
Treatment of Type B. Hemophilus Influenzae Meningitis. Hattie E. Alexander.—p. 517.
Diagnosis of Rh Incompatibility, Especially by Microscopic Appearances: Its Relation to Syndrome Formerly Diagnosed as Erythroblastosis. Madge Thurlow Macklin.—p. 533.
Bacterial Enteritis. G. Varela.—p. 555.
Arthropod Borne Diseases. E. C. Faust.—p. 563.
Whooping Cough. N. Silverthorne.—p. 584.
Multiple Neuropathy, Grade 3. J. A. Toomey and J. Messina.—p. 590.

Penicillin in Pediatrics.—Penicillin has been used in the pediatric service of the Mayo Clinic in the treatment of 54 patients with various types of bacterial infection. For the local treatment of most bacterial infections in infants a total daily dose of 20,000 to 40,000 units of either the sodium or the calcium salt appears to be adequate. For larger children a total daily dose of 60,000 to 80,000 units is as a rule enough with the possible exception of cases of overwhelming sepsis, in which it may be desirable to use as much as 100,000 to 150,000 units. For the local treatment of wounds involving soft tissues as well as bone, saline solutions containing 250 to 500 Oxford units of penicillin per cubic centimeter are suitable. Penicillin may be administered locally in the form of the dry substance alone or in combination with sulfanilamide. These sulfanilamide-penicillin powders usually contain 5,000 units of penicillin per gram of sulfanilamide. Penicillin may also be administered locally as a cream containing 250 units of penicillin per gram. For local therapy the calcium salt of penicillin is preferred to the sodium salt. For systemic administration to infants the intermittent intramuscular method is the best. From 3,000 to 5,000 units should be administered in 1 or 2 cc. of isotonic solution of sodium chloride every three hours, day and night. In overwhelming sepsis as much as 10,000 units may be given by the intramuscular method every three hours. In larger children penicillin can be administered by the continuous intravenous drip. In certain instances, such as extensive burns, in which suitable sites for intramuscular injection are not available, it may be desirable to resort to the infusion of penicillin by way of the bone marrow. The sternum or clavicle can be used satisfactorily. Forty-five of the 54 cases responded favorably. Penicillin was effective in bacteremia, severe cellulitis, acute osteomyelitis, meningitis, pulmonary suppurative disease, certain pyogenic skin infections, otitis media, actinomycosis and a group of miscellaneous infections including septic arthritis and ocular infections. Penicillin is of little or no value in gram negative bacillary infections, including undulant fever, tularemia, influenza or infections due to the colon-typhoid-dysentery group of organisms or to Friedländer's bacillus. Infections of the urinary tract due to the gram negative organisms do not respond to penicillin. It is of no value in tuberculosis, acute rheumatic fever, rheumatoid arthritis, ulcerative colitis, malaria or blastomycosis. It is useless in leukemia as well as in certain skin diseases including lupus erythematosus. The advantage of penicillin over sulfonamides resides not only in its greater antibacterial powers but also in the low incidence of toxic manifestations.

Journal of Pharmacology & Exper. Therap., Baltimore
82:203-302 (Nov.) 1944

- Value of Guinea Pig Corneal Reflex for Tests of Surface Anesthesia. M. R. A. Chance and H. Lobstein.—p. 203.
- Evaluation of Assay of Vitamin P by Means of Effect of Low Pressure on Mice. A. C. Kibrick and A. E. Goldfarb.—p. 211.
- Effect of Administration of Sodium Bromide to Pregnant Rats on Learning Ability of Offspring: II. Maze Test. B. K. Harned, H. C. Hamilton and V. V. Cole.—p. 215.
- Quantitative Study of Effects of Ouabain on Electrocardiogram. L. Apter, R. Ashman and E. Hull.—p. 237.
- Renal Elimination of Sulfamerazine, Sulfamethazine, Sulfadiazine and Sulfathiazole by Dog. K. H. Beyer, L. Peters, Elizabeth A. Patch and H. F. Russo.—p. 239.
- *Neutralization of Gastric Acidity with Basic Aluminum Aminoacetate. J. C. Krantz Jr., Dorothy W. Kibler and F. K. Bell.—p. 247.
- Protection Against Lethal Doses of Pentavalent Arsenical and Antimonial Compounds in Rats by p-Aminobenzoic Acid, a Histologic Study. P. N. Harris.—p. 254.
- Effect of Acid and Alkali on Absorption and Metabolism of Quinine. J. C. Andrews and W. E. Cornatzer.—p. 261.
- Studies on Synthetic Curare-like Compounds: III. Toxicity and Curarizing Action of Some New Quinine Derivatives. H. F. Chase, A. J. Lehman and Eleanor E. Rickards.—p. 266.
- Pharmacologic Studies of New Vasoconstrictor: 2-Naphthyl-(1'-Methyl)-imidazole Hydrochloride (Privine or Naphthazoline): II. Vascular and Respiratory Reactions in Anesthetized Dog. B. N. Craver, H. F. Chase and F. F. Yonkman.—p. 275.
- Anesthesia: XVI. Determination of Isopropenyl Vinyl Oxide in Blood of Anesthetized Animals. W. E. Evans Jr., C. J. Carr, Virginia M. Waters and J. C. Krantz Jr.—p. 288.
- New Aerobic Metabolite Whose Production by Brain is Inhibited by Apomorphine, Emetine, Ergotamine, Epinephrine and Menadiolone. H. I. Kuhn and Margaret Liversedge.—p. 292.
- Dinitrophenol Cataract in Chick: Effect of Age. B. H. Robbins.—p. 301.

Neutralization of Gastric Acidity.—Krantz and his associates observed the lag in acid absorbing and neutralizing capacities of various samples of aluminum hydroxide gel. A new compound, the basic aluminum salt of aminoacetic acid, was found to have the capacity to buffer and neutralize hydrochloric acid. Its prompt and prolonged buffering of acid suggested its use in the treatment of hyperacidity and peptic ulcer. On the basis of the aluminum content, basic aluminum aminoacetate is 42 per cent more efficient in acid consuming power than dried aluminum hydroxide gel. Feeding studies on rats did not result in abnormalities. Basic aluminum aminoacetate was administered to 20 persons in doses of 2 to 4 Gm. in powder form suspended in water. It was tolerated without symptoms. Two patients with active peptic ulcer were treated with the salt as the sole antacid. Healing was observed by the gastro-scope and the patients became asymptomatic. In 2 cases of latent peptic ulcer with postprandial distention and hyperacidity prompt and prolonged relief followed ingestion of 0.5 Gm. compressed tablets of the salt. Extensive clinical investigations with the compound are in progress.

Minnesota Medicine, St. Paul

27:991-1062 (Dec.) 1944

- Significance of Rheumatic Fever to Community. H. McCulloch.—p. 991.
- Consideration of Physiologic Action of Thionacil and Other Goitrogens. G. M. Higgins.—p. 997.
- Thionacil: Therapy in Hyperthyroidism. G. T. Evans and E. B. Flink.—p. 1002.

New England Journal of Medicine, Boston

231:781-816 (Dec. 14) 1944

- Plea for Thought Taking in Medical Treatment of Cholecystitis. W. C. Alvarez.—p. 781.
- Surgical Aspects of Gallstones. H. M. Clute and F. R. Kenney.—p. 783.
- Radiologic Aspects of Gallbladder Disease. M. C. Sasman.—p. 786.
- Endocrine Aspects of Cancer. I. T. Nathanson.—p. 795.

231:817-864 (Dec. 21) 1944

- *Use of Sulfadiazine as Prophylactic Against Respiratory Disease. R. C. Hodges.—p. 817.
- Prevention of Pulmonary Embolism. C. A. Robinson.—p. 821.
- Frank Burr Mallory: A Doctor of Physicians. W. Freeman.—p. 824.
- Sulfonamide Therapy in Otolaryngology. R. L. Goodale.—p. 829.

Sulfadiazine as Prophylactic Against Respiratory Disease.—Hodges states that hospital admissions for streptococcal and pneumococcal infections from an Army Air Force technical school rose alarmingly during January 1944. The experience of the previous year suggested that serious epidemics were beginning. Administration of sulfadiazine was made

throughout February and March. The results appeared to be beneficial. The most striking effect was on beta-hemolytic streptococcus infection. It appeared that streptococcal sore throat and scarlet fever could be reduced almost to zero. There was a less evident but still significant effect on pneumococcal infection. Sixteen weeks after the onset of the epidemic of streptococcal infection the incidence of acute rheumatic fever was well below the accepted rate. Ordinary respiratory disease also showed a response to the drug. This is thought to be due to the fact that streptococci and pneumococci give a clinical picture indistinguishable from that of the common cold, although this concept remains to be proved. A variety of dosages was tried. It is believed that the optimal dosage for a given group should be worked out individually. No serious untoward reactions occurred.

Radiology, Syracuse, N. Y.

43:531-637 (Dec.) 1944

- X-Ray Evidence of Old Forgotten or Previously Undiagnosed Fractures. J. E. Habbe and H. H. Wright.—p. 531.
- Induction Film as an Aid in Appraising Subsequent Pulmonary Lesions. A. N. Alpern and J. E. Benjamin.—p. 548.
- Röntgenologic Aspects of Retroperitoneal Perforations of Duodenum. E. A. Jacobs, G. J. Culver and E. C. Koenig.—p. 563.
- Dosage Table for Linear Radium Sources. Edith H. Quimby.—p. 572.
- Priodax: A Contrast Medium for Cholecystography: Analysis of 163 Cases, Outlining Various Reactions in Three Technics and Operative Findings in 23 Cases. W. W. Vaughan and M. Eichwald.—p. 578.

War Medicine, Chicago

6:353-438 (Dec.) 1944

- Experiences with Anesthesia in Combat Areas. I. R. Hayman.—p. 353.
- Validity of Psychiatric Criteria for Rejection for Service with the Armed Forces: Study of Cases of 696 Registrants with Psychiatric Diagnoses from New York City Selective Service Area. S. J. Kopetzky.—p. 357.
- *Acute High Altitude Anoxia: Gross and Histologic Observations in 27 Cases. R. A. Kritzer.—p. 369.
- Chemotherapy in Intracranial Infections: V. Treatment of Staphylococcal and Pneumococcal Meningitis with Sulfathiazole and Sulfadiazine. W. F. Meacham, E. Smith and C. Pilcher.—p. 378.
- Marihuana Addict in Army. E. Marcovitz and H. J. Myers.—p. 382.
- Altered Taste in Dengue. S. R. Elek.—p. 392.
- Protective Effects of Preoxygenation on Abdominal Gas Pain: Results of Study of Preflight Breathing of Oxygen on Pain Resulting from Decompression to 38,000 Feet. F. M. Henry, J. H. Lawrence, E. V. Bridge and O. L. Williams.—p. 395.

High Altitude Anoxia.—Fatalities in air crews due to deprivation of oxygen during bombing operations at high altitude afforded an opportunity to study the gross and microscopic anatomy of acute anoxia in man as it occurs at low atmospheric pressure. Twenty-seven necropsies were performed during 1943 in one hospital on members of high altitude bomber crews in which death had been attributed to anoxia by the Air Force medical officers who investigated the cases. Widespread, severe capillary congestion was found. This was conspicuous and most constant in the pulmonary, renal, intestinal and cerebral capillaries. The skeletal muscle did not show this congestion. In a high proportion of cases the systemic venous and the portal circulations showed gross and microscopic congestion, with dilatation of the right ventricle. There was wide individual variation in the incidence, location and amount of edema and hemorrhage. An exception to this was the consistent occurrence of hemorrhage in the thymus and in the middle ear. Swelling of endothelial cells of capillaries of the renal medulla was observed. The presence of fat free and glycogen free vacuoles previously described in the myocardium and liver and less frequently in cells of other organs was confirmed. These vacuoles occurred with equal frequency in cases of anemic anoxia (acute carbon monoxide poisoning) but were rarely found in the tissues in nonanoxic control cases.

West Virginia Medical Journal, Charleston

40:373-404 (Dec.) 1944

- Tuberculosis in West Virginia Industries. J. T. Duncan and C. S. McKinley.—p. 373.
- Newer Methods of Communicable Disease Control. L. F. Badger.—p. 378.
- Observations on Improved Disease Control Methods Among Troops. J. W. R. Norton.—p. 382.
- Hyperthyroidism and Thionacil. Case. F. R. Whittlesey.—p. 385.
- Primary Carcinoma of Both Breasts: Case. R. K. Buford and M. A. Iatesta.—p. 386.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

38:105-140. (Oct.) 1944

"What Is the Right Time, Please?" Surgeon's Answer. J. E. H. Roberts.—p. 105.

*Carbon Dioxide by Inhalation in Management of Cough. A. L. Banyai and A. V. Cadden.—p. 111.

Mass Miniature Radiography in Royal Air Force. R. R. Trail and others.—p. 116.

Inhalation of Carbon Dioxide for Cough.—Banyai and Cadden have used carbon dioxide by inhalation as an expectorant in pulmonary tuberculosis for the past thirteen years. It changes an excessive yet unproductive cough into a useful cough and thereby often helps to eliminate the dangers inherent in an accumulation and retention of inflammatory products. Carbon dioxide liquefies the mucopurulent exudate in the bronchi and reduces its viscosity; the sputum is loosened up and consequently is expectorated without strain or effort. Adequate evacuation of the bronchi ensures comparatively long periods of rest free from annoying cough. The apparatus used by the authors consists of a tank containing a mixture of 10 per cent carbon dioxide and 90 per cent oxygen. An oxymeter regulates the flow of gas per minute. In some patients it was found expedient to give the inhalation through a glass tube instead of the mask. The open method is recommended for patients who are debilitated or who show some side effects when the closed inhaler is used. The meter is set for 4 to 5 liters per minute for closed inhalations and for 5 to 7 liters per minute for the open method. The treatments vary in length from five to fifteen minutes, and the inhalations are administered once, twice or three times a day. It is necessary to observe the patient closely during the first treatment. If it is noted that the respirations become too strenuous, the inhalations should be given with brief (one minute) interruptions. In the beginning the treatments are given daily; subsequently the frequency of inhalations can be reduced. Almost all patients tolerate carbon dioxide inhalations well, provided the amount of the inhaled gas and the timing of inhalations are individually adapted to the patient's requirements. In some patients they noted transient minor side effects, such as hot sensations, palpitation, weakness, frontal headache and slight dizziness. None of these symptoms interfered with the treatment when proper adjustments were made in the method of administration. The liquefying effect of carbon dioxide on mucus in the bronchial tract is greater than that of the commonly used expectorants. Carbon dioxide by inhalation occupies a unique place among expectorants in that, besides its liquefying action, it is capable of stimulating the respiratory center. Stimulation of the respiratory center causes increased respiratory expansions of the thorax, a consequent stretching and dilatation of the bronchi and an increase in the bronchial peristalsis. These factors contribute substantially to the effective mechanical elimination of inflammatory products from the respiratory tract.

British Medical Journal, London

2:683-714 (Nov. 25) 1944

*General Anesthesia in Shock. A. C. Crooke, C. J. O. R. Morris and R. G. Bowler.—p. 683.

*Use of Penicillin Pastilles in Oral Infections: Preliminary Report. A. B. MacGregor and D. A. Long.—p. 686.

*Analysis of 259 of Recent Flying Bomb Casualties. R. C. Bell.—p. 689.

Massive Surgical Emphysema During Course of General Anesthesia. N. R. Barrett and D. Thomas.—p. 692.

Unusual Case of Generalized Tuberculosis. W. H. Mylechreest and I. M. Scott.—p. 693.

General Anesthesia in Shock.—Crooke and his associates show that operations on seriously shocked patients are associated with a notoriously high mortality. This may be due to the further loss of blood entailed during the operation, to the stimulus of the operative manipulations or to the anesthetic. It has become apparent that the most important single factor has been the anesthetic, and an examination has therefore been made of the effect of different anesthetics on the cardiovascular systems of 26 patients with normal plasma volumes, of whom 19 underwent various major operations—the majority a partial

gastrectomy. In all cases the pulse and respiratory rates and the blood pressure were recorded at about three minute intervals. Determinations of plasma volume were made and the dye concentration curves followed at about thirty minute intervals until the end of the operation. The hemoglobin was also determined at the same intervals. Electrocardiographic records were made of 9 patients who underwent major operations. The anesthetics used were nitrous oxide, oxygen and ether, cyclopropane and oxygen, sodium pentothal and spinal analgesics. No significant changes were found, although great alterations in blood pressure occurred. Serial electrocardiograms in 9 patients showed a constant change even though a considerable alteration in blood pressure had taken place. It is concluded that anesthetics affect blood pressure mainly through the vasomotor system. Cyclopropane and oxygen tended to raise the blood pressure; nitrous oxide, oxygen and ether had variable effects on it; sodium pentothal and spinal analgesics depressed it. In a patient whose plasma volume was reduced by trauma there was a greater tendency for these anesthetics to depress blood pressure. Cyclopropane and oxygen was the best and nitrous oxide with adequate oxygen and a minimal amount of ether was the next best anesthetic for these cases.

Penicillin Pastilles in Oral Infections.—MacGregor and Long selected gelatin as a medium for penicillin pastilles. Care was taken that the penicillin was not subjected to excessive heat; it was added to the gelatin base at 42 C. and stirred in just before the latter was about to set. Pastilles were cut to a standard size of approximately $\frac{3}{8}$ inch square and $\frac{1}{8}$ inch thick to facilitate insertion and retention in the buccal sulcus. It was shown in experiments that the penicillin remained active in the gelatin base. The standard dose adopted was 500 units of penicillin in each pastille. Each patient was instructed to place a pastille in the buccal sulcus, to leave it there until it had dissolved without chewing or sucking and then to replace it with another. The time taken for the pastille to dissolve varied in different patients and in general tended to be shorter in the earlier and more acute stages of the infection owing to the greater degree of salivation. The average was about three quarters of an hour. The penicillin pastilles were used on 25 patients with acute ulcerative gingivostomatitis (Vincent's type). It was found that this condition can be treated more simply and more quickly with penicillin pastilles than by any other method. The loss of tissue caused by the more usual treatments with caustics and escharotics can be avoided. The penicillin pastilles were used also for 17 patients with acute hemolytic streptococcal tonsillitis, including 4 with scarlet fever. The patients seemed to respond clinically to treatment with pastilles. The effect on the throat flora appeared to be rapid. The early disappearance or reduction in numbers of hemolytic streptococci in the throat suggests that the risk of droplet infection is greatly reduced. The treatment of throat carriers of hemolytic streptococci proved disappointing. It is of interest that they became negative while undergoing treatment. It appeared that surgical conditions of the mouth and throat could be kept free from pathogenic organisms during administration of the pastilles, with gratifying symptomatic relief. On bacteriologic grounds faucal diphtheria should be an indication for treatment with penicillin pastilles.

Flying Bomb Casualties.—Bell describes injuries caused by the flying bomb raids as seen in a small hospital of the Emergency Medical Service. His hospital dealt with 222 outpatients and 256 inpatients, with 18 deaths. Flying glass was the most frequent cause of injury, totaling over 100 casualties. Most of the injuries were above the nipple line, chiefly of the face and neck; a large proportion were received when looking out of windows. There were 5 cases of perforating wounds of both eyes and 10 perforating wounds of one eye. The penetrating power of flying glass is low. Usually it lies just under the skin in the fat, but when present in hundreds of pieces it presents a problem which has not yet acquired a satisfactory solution. The rarity of penetrating wounds is due to the shape of the fragments, which tend to be small flat pieces of metal. Occasionally the bomb fragments are large tangled masses of crumpled sheeting weighing a pound or more, and these may cause severe injuries. In the beginning injuries from masonry were uncommon. Later they became more frequent as adequate

cover was taken, and instead of being killed the victims were buried with various degrees of trauma. There was not a single case of crush syndrome with edema of the injured part, anuria and uremia. This is probably due to the increased speed of the rescue service and possibly to a lessening in the enthusiasm for intravenous plasma therapy. The injuries tended to be severe, and there was a proportionately high death rate (9 out of 52). It was difficult to estimate the number of patients whose lungs were affected by blast and to assess the relative damage caused by blast in contradistinction to other agents. Three patients had severe pain in the chest, breathlessness and traces of blood in the sputum. One of these died. At necropsy he was discovered to have gross contusion of the left side of the brain and of the left lung, a small split in the capsule of the spleen and a hematoma over the left femur. Microscopy showed blood cells among the brain tissues and blood cells in most of the alveoli of the left lung. Many of the alveolar walls were torn. It is difficult to decide on the exact part played by blast in eye injuries. There were 4 hyphemas which were not explainable except as the result of blast. In injuries of the brain it was also difficult to decide whether blast had been the sole agent. Corneal abrasions due to dust were common. The respiratory system also suffered from the effects of dust. At operation the anesthetist remarked time and again on the dirt in the pharynx and trachea. An air raid warden reported that several of the dead had been suffocated by dust, the mouth, nose and throat being completely blocked, while no other injuries were visible. Psychologic shock was the term coined to cover hysteria, fright and mental upset requiring only rest and reassurance.

Lancet, London

2:647-678 (Nov. 18) 1944

Lung Abscess: Pathology and Diagnosis of Certain Types. N. R. Barrett.—p. 647.

Direct Laryngoscopy and Tracheal Intubation. F. B. Bannister and R. G. Macbeth.—p. 651.

Paroxysmal and Postural Headaches From Intraventricular Cysts and Tumors. W. Harris.—p. 654.

Alloxan Diabetes in Monkeys. S. Bannerjee.—p. 658.

*Fatal Coronary Sclerosis in Boy of Ten Years. E. Jokl and J. Greenstein.—p. 659.

Fatal Coronary Sclerosis in Boy of Ten.—Jokl and Greenstein report that a boy aged 10 collapsed and died five minutes after a boxing match lasting three rounds. He had received a number of blows against the chest and abdomen but was not knocked down, nor did he seem to be unduly distressed at any time during the fight. At necropsy the left descending branch of the coronary artery was blocked for a distance of about an inch. Above and below the occlusion were slight atheromatous changes in the intima.

Quarterly Journal of Medicine, Oxford

13:37-105 (April-July) 1944

*"Fibrositis" of Back. W. S. C. Copeman and W. L. Ackerman.—p. 37.

*Proteolyzed Liver in Treatment of Refractory Anemias. L. J. Davis and L. S. P. Davidson.—p. 53.

Critical Review of Pernicious Anemia of Pregnancy. Sheila T. E. Callender.—p. 75.

Fibrositis of Back.—Copeman and Ackerman say that the frequency of fibrositis of the back seen among otherwise healthy young men in the army stimulated their interest in this condition. As a first step, exact measurements were taken of the site of the painful focus in a large number of sufferers and a "pain chart" was plotted. The back of every patient who died in the hospital from any cause was then systematically examined, with special reference to these areas. As a result of this and of subsequent clinical observations and biopsies, conclusions have been arrived at which seem to explain certain cases of "fibrositis." The authors say that their previous observation that the painful points may arise during any pyrexial illness or as the result of trauma was confirmed; also that the subjective pain disappears but that the point often remains and can be detected by tenderness on palpation. It can be reactivated subsequently and may become the seat of chronic pain. The back was carefully dissected in 14 bodies with particular reference to the chief sites of pain. It was found that a basic fat pattern was constantly present even in the most cachectic subjects in whom all other fat was absent. This fat pattern was observed to

correspond in shape and situation with the pain pattern. No lesions suggestive of inflammatory reaction were found in any deep fibrous tissue, but abnormalities affecting the lobules of the fat pattern were found on several occasions. The abnormality which seemed most likely to have clinical significance was the herniation of fat lobules through the walls of their investing fibrous tissue. These fat hernias have been classified into three types: the nonpedunculated, the pedunculated and the foraminal. In the nonpedunculated type, fat which lies under a fascial covering, as for instance in the angle of the deep fascia where it splits to invest the sacrospinalis muscle, or along the crest of the ilium, is always under tension and so will bulge into any potential hernial space that may be present either as the result of congenital weakness or as the result of trauma. The pedunculated type of hernia has been found and removed in several instances. In these cases the onset of the pain was produced by a sudden strain several years previously. It is thought therefore that it is probably a late result of strangulation in a hernia originally of the nonpedunculated type. The foraminal type of hernia was found only along the edges of the sacrospinalis muscles. These areas were exposed in the cadavers, and it was found that the nerves passed out in company with a small artery and vein through a foramen in the deep fascia of the muscle. Overhanging this was a narrow lateral fold of the fascia so arranged as to occlude the foramen on flexion of the back. In several cases it was seen that this mechanism had apparently proved ineffective and a small tuft of fat lobules had also herniated through the foramen. The authors suggest that the anatomic conditions which they have described represent a comparatively advanced stage in the process and that to explain the minor and less localized degrees of fibrositis it is not necessary to postulate actual herniation of fat tissue. They describe biopsies on 10 selected patients with fibrositis. Their observations at biopsy led them to evolve a technique of treatment which they call "teasing" the nodule. This consists in anesthetizing a small area of skin over the site of the trigger point, which has previously been ringed with a skin pencil. It is then transfixed with a stout rigid needle, and after injection of 10 to 20 cc. of 1 per cent procaine solution under the greatest pressure possible the point of the needle is swept round deeply in such a way as to undercut the nodule.

Proteolyzed Liver in Refractory Anemias.—Davis and Davidson administered orally proteolyzed liver, a papain digest of whole liver, to 13 patients with severe anemia refractory to treatment with potent liver extracts administered parenterally. In 5 patients the morphology of the peripheral blood and sternal marrow was respectively macrocytic and megaloblastic. A megaloblastic marrow smear is identical in appearance with that seen in Addisonian pernicious anemia in relapse. In such smears a high proportion of the erythroblasts are large cells with abundant dark blue cytoplasm and large nuclei displaying a finely reticulated structure in which nucleolar remnants may or may not be seen. Many of the more mature red cell precursors which show varying degrees of hemoglobinization are distinguished from normoblasts by their relatively greater size and particularly by the loosely woven character of the nuclear chromatin. The 5 patients with refractory anemias with megaloblastic sternal marrows were an elderly woman, a child, a middle aged man, a young man and a young woman in the puerperium. In all these 5 patients administration of proteolyzed liver resulted in a prompt and vigorous hemopoietic response and the rapid restoration of the patient to normal health. In 3 other patients the anemia was also macrocytic, but the sternal marrow films showed dimorphic erythropoiesis. The authors consider the term dimorphic a convenient provisional designation for sternal marrow films showing erythropoiesis which is predominantly normoblastic but partially megaloblastic. In these 3 patients treatment with proteolyzed liver was followed by only partial blood regeneration with the survival of the patients in moderate health. The remaining 5 of the 13 patients had anemia of the aplastic type with hypocellular normoblastic sternal marrow, and they completely failed to respond to proteolyzed liver or to any other form of treatment. It is suggested that proteolyzed liver contains in a readily assimilable form some hemopoietic maturation factor additional to the antianemic factor present in fractionated liver extracts.

Chinese Medical Journal, Washington, D. C.

62:1-110 (Jan.-March) 1944

- Calcium and Phosphorus Metabolism in Osteomalacia: Availability of Inorganic, Phytin and Dietary Phosphorus and Effect of Vitamin. D. K. Wang, S. H. Liu, H. I. Chu, T. F. Yu, H. C. Chao and H. C. Hsu.—p. 1.
- Solustibosan in Treatment of Kala-Azar. H. L. Chung, C. W. Wang and C. U. Lee.—p. 17.
- New Sodium Salt of Mannite Antimonie Acid in Treatment of Kala-Azar in Chinese Hamsters. H. L. Chung and H. K. Chow.—p. 26.
- Prevention and Treatment of Common Nutritional Deficiency Diseases. H. C. Hou.—p. 32.
- Investigation of Infant Mortality and Its Cause in Chengtu. M. Y. Cheng.—p. 47.
- *Use of Honey in Treatment of Chilblain, Nonspecific Ulcers and Small Wounds: Preliminary Report. K. L. Yang.—p. 55.
- Roentgenologic Anatomy of Position of Coils of Normal Small Intestine. F. Y. Khoo, K. S. Liu and K. H. Ch'en.—p. 61.

Honey in Treatment of Chilblain, Ulcers and Wounds.

—Yang says that in the dermatologic clinic of the National Medical College at Shanghai cod liver oil ointment has been used in the treatment of chronic leg ulcers and small wounds and has been found to be very effective. This success is attributed to its rich vitamin A content, which has the property of stimulating epithelization and granulation tissue formation. After the medical college was moved to Kunming in 1939 the difficulty in obtaining cod liver oil prohibited its further use. It occurred to the author that honey might be employed as a substitute, the rationale of such treatment being that, owing to its high sugar content, it is bacteriostatic; while, owing to its yellow pigment, it might be rich in vitamin A. A honey ointment was made by the addition of 20 per cent of petrolatum. The ointment was first used with encouraging results in leg ulcer. Later when the medical college was moved from Kunming to Chungking it was decided to resume the honey treatment, but, since petrolatum was not obtainable, lard was used instead. The ointment, composed of 80 per cent honey and 20 per cent lard, was used in 50 cases of chilblain, chilblain ulcers, ordinary ulcers and small wounds. Its success in hastening the subsidence of passive hyperemia and edematous swelling, and in stimulating epithelization and granulation tissue formation, was great. Its application is simple and convenient, and its sources of supply are plentiful, thus being especially useful under present wartime conditions.

Wiener klinische Wochenschrift, Vienna

56:21-40 (Jan. 15) 1943

- *Value of Liver Puncture in Diagnosis of Various Diseases of Liver. I. Hatigianu, T. Spárchez, P. Radu and I. Macavei.—p. 21.
- Carcinoma and Sexuality. H. Truttwin.—p. 28.
- Sedimentation Rate of Red Blood Corpuscles in Blood of Right and Left Side of Heart. M. Bénard.—p. 31.

Liver Puncture in Diagnosis of Liver Diseases.—Hatigianu

and his associates report 45 cases in which a 2 cc. glass syringe and a long thin needle were employed in puncture of the liver. Puncture should be performed in the morning on an empty stomach half an hour after the administration of 15 drops of pantopon (a mixture of the hydrochlorides of opium alkaloids, containing 50 per cent of anhydrous morphine hydrochloride). By applying slight suction a punctate may be obtained rich in liver tissue with only a small amount of blood. The term hepatogram is applied to the cytologic preparation of the punctate on the microscopic slide. Liver puncture was performed in 11 cases of tumor of the liver, proving its value as biopsy. A definite early diagnosis in the initial stage of carcinoma was made from the hepatogram, which is characterized by lack of uniformity of the cells associated with an abnormal increase and irregular arrangement. Liver puncture is an aid to differential diagnosis of liver carcinoma from liver sarcoma, particularly from that of melanosisarcoma. The deep dark pigment in the form of round, egg shaped granules fills almost the entire protoplasm of the cell and is localized about the nucleus. Cellular alterations may likewise be demonstrated on the hepatogram of grave cases of parenchymatitis of the liver, particularly in icterus of eholangitic type. Puncture may be of practical importance in cases of pigmentary cirrhosis in which medium sized, single or accumulations of brown granules may be found within or outside the protoplasm even in atypical cases which do not

present bronzed skin. Immature blood elements may be demonstrated in the hepatogram in leukemia; the premyelocytes and myelocytes may be predominant; there may be a few myeloblasts, and basophil erythroblasts may likewise be found. The microscopic picture of a hepatogram in acute leukemia resembles that of the myelogram, so that liver puncture may be dispensed with in these cases, although it may have its value in aleukemic and erythroblastic leukemia. In pernicious anemia the megaloplastic function of the liver may be demonstrated in the hepatogram. Liver puncture may reveal the causative agent in cases with a slow septic course and may clarify the bacteriologic diagnosis of the condition.

Khirurgiya, Moscow

4:3-18, 1944. Partial Index

- Volatile Oils in the Treatment of Infected Wounds: Part I. O. T. Shishkina.—p. 3.
- Volatile Oils in the Treatment of Infected Wounds: Part II. P. V. Lebedinskiy.—p. 7.
- *Cervical Vagus-Sympathetic Block in the Treatment of Shock. S. P. Skvortsov.—p. 11.
- Local Anesthetic Block for Penetrating Wounds of Thorax. A. G. Karavanov.—p. 15.
- *Vagus-Sympathetic Block. A. V. Vishnevskiy.—p. 16.

Vagus-Sympathetic Block in Shock.—Skvortsov applied the method of procaine hydrochloride infiltration anesthesia of the vagus nerve and the sympathetic nerve in the neck in a variety of war casualties such as open pneumothorax, abdominal operations and lesions of extremities when the men were brought in in a state of shock. In cases of open pneumothorax the method resulted in raising the blood pressure in from five to ten minutes 13 to 15 mm. of mercury in 88 per cent of the cases. Pain and dyspnea disappeared in about 91 per cent, the cough reflex disappeared and manifestations of shock gradually disappeared in the course of an hour and a half to two hours. The fact that the vagus-sympathetic block raises the blood pressure within three to five minutes of its application suggests that its effect is accomplished by the stimulating action on the cardiovascular nervous system. The blood pressure sometimes is raised above that of the normal pressure for the individual. The effect lasts in normal persons for from two to three hours, that is, until the procaine solution is absorbed. In cases in which the block is ineffective the author advises a second infiltration two to three hours later. Bilateral infiltration is advisable in cases of low blood pressure and slow pulse or in cases in which unilateral block does not produce an improvement in blood pressure. Combination of vagus-sympathetic block with blood transfusion gives better results in traumatic shock than transfusion alone. Thus in shock of medium or grave degree transfusion of a liter of blood and of 270 cc. of substitute fluid gave on an average 25 mm. of mercury rise of blood pressure. In other words, for each 500 cc. of transfused blood there was a rise of blood pressure amounting to 10 mm. When the blood transfusion was combined with the vagus-sympathetic block the blood pressure in patients with shock, transfusion of 500 cc. of blood and 220 cc. of blood substitute gave an average rise of 22.5 mm. The effect of the block can be utilized not only in traumatic shock but in all states accompanied by collapse and hypoxia.

Vagus-Sympathetic Block.—According to Vishnevskiy, the physiologist Morrison called attention to the fact that section of the vagus nerve in the neck prevented the development of grave reflex manifestations on the part of respiration and cardiovascular function in the course of pneumonectomies in dogs. Vishnevskiy applied this principle in his operations on the human thorax. Instead of sectioning the nerve he utilized the method of creeping infiltration with a weak (0.25 per cent) solution of procaine hydrochloride. From 60 to 80 cc. of this solution is slowly injected at the edge of the sternocleidomastoid muscle above the point where it is crossed by the external jugular vein. The procaine solution slowly spreads and comes in contact with the perineural surfaces of the vagus, the sympathetic nerve and the phrenic nerve. The method proved to be very effective in the prophylaxis and therapy of pleural pulmonary shock. The author stresses the advantages of using a weak solution of procaine and its gradual penetration to the perineural tissues of the nerves.

Book Notices

Surgery of the Hand. By Sterling Bunnell, M.D. Cloth. Price, \$12. Pp. 734, with 597 illustrations. Philadelphia, London & Montreal: J. B. Lippincott Company, 1944.

This well written and beautifully illustrated monograph by America's foremost exponent of the surgery of the hand represents the work of a surgeon's lifetime. It obviously cannot be reviewed in adequate fashion in a few brief paragraphs. One should simply state that it deserves careful reading and study by every surgeon interested in the surgery of the upper extremity.

Although the title stresses the hand, it might have been "The Surgery of the Upper Extremity," for its scope is much broader than the simpler title indicates. The volume is divided into four parts. The first part includes a discussion of the comparative anatomy and a detailed description of the normal hand. Part 2 is devoted to the reconstruction of the hand and includes the subject of contractures, bone and joint disabilities, nerve and tendon injuries, and in a fifty page section on the arm in its relation to the hand subjects as diverse as sternoclavicular and acromioclavicular dislocations, recurrent dislocation of the shoulder, brachial plexus injuries and "tennis elbow." Part 3 is devoted to the treatment of injuries and infections of the hand and part 4 to congenital deformities, vasomotor and trophic conditions and to tumors, the latter section written by Dr. L. D. Howard Jr.

Part 2, devoted to the reconstruction of the hand and constituting approximately 380 of the 700 pages of the volume, describes the procedures which we have come to associate particularly with the author's name. Operations on the joints, nerve suture and the use of nerve grafts to fill defects, tendon suture and tendon grafting are described and illustrated in the clearest fashion characteristic of the author's surgical papers. Because of the wealth of material presented and the many somewhat complicated technical procedures described it is difficult for a reviewer to choose any single subject or group of subjects and attempt to present the author's ideas or to evaluate them critically. One suggested procedure perhaps should be mentioned, both because of its importance and because it seems inconsistent with the admirable principle of "atraumatic technique" which the author has emphasized so forcefully. In discussing "debridement or excision of wound" (pp. 451-452) following injury of the hand, the author suggests that one "... so the wound in all its interstices with a half-strength tincture of iodine as used on skin and then blot it dry at once to limit its action on the surface. This destroys surface bacteria and so marks the tissue that every particle can be excised. With toothed forceps and sharp plastic scissors (curved, flat and double pointed) the complete surface of the wound is systematically excised for 1 or 2 mm. deep, or more if necessary, to remove all nonviable tissue. First, the complete skin margin is excised, and circling deeper and deeper in the wound all is excised so completely in a dry and bloodless field that not a crumb of marked tissue remains. Exposed nerves, tendons, articular surfaces or essential structures are spared. The tendon and nerve ends are thinly clipped off, and ends of fractured bones are chiseled off to good bone. On completion we have a clean surgical wound lined with viable tissue free from bacteria, traumatized tissue and chemical." With a part of the body in which essential structures are packed so closely and lie so close to the surface, such a method of converting an open wound into a clean wound seems both ill considered and unnecessarily destructive.

One can say without exaggeration that no one heretofore has attempted so comprehensive or detailed a presentation of the surgical treatment of disabilities of the hand, and no surgeon who cares for such injuries or disabilities should fail to give this volume the considered attention it richly merits.

Crime and the Human Mind. By David Abrahamson, M.D., Department of Psychiatry, Columbia University, New York. Cloth. Price, \$3. Pp. 244. New York: Columbia University Press, 1944.

The claim that is made on the jacket of this book that this is the first volume to deal comprehensively with the psychiatric aspects of crime is untrue. Other books dating back to the end of the last century have been published on the subject, and

many of them in their day were better than this one. True, Abrahamson has brought under a single volume many of the more recent concepts of criminologic psychiatry, but his point of view seems to be extremely limited for a volume which has ten pages of bibliography. The author's point of view seems to be limited to a few of the most common articles on the subject having to do with criminologic psychiatry, and there is a preponderance of material coming from New York and perhaps an overemphasis on the reports of the Court of General Sessions Clinic.

The subject matter included in this volume deals with criminology as a science, the mind in relation to crime, heredity and environment as causes of crime—truly an unusual use of the word "cause"—the functional view of the offender, the psychiatric-psychologic examination of the offender, the psychology of the individual offender: classification, juvenile and war delinquency, the psychiatric-psychologic background of murder, the psychiatrist and the criminal law, and treatment and research.

Dr. Abrahamson's career, as it is described on the jacket, would seem to give him an unusually fitting background to write a volume on psychiatry and crime, for he has been at St. Elizabeths Hospital in Washington, at the Illinois State Penitentiary and at the Psychiatric Clinic of the Court of General Sessions, but the book seems to be peculiarly impractical. There are case histories given, but they lack the quality of reality. The bibliography too is peculiar. Little known works of rather insignificant authors on criminologic subjects are quoted, yet two or three psychiatrists who have contributed hundreds of articles to the literature, including several important monographs, are almost entirely ignored. In spite of these criticisms the book is interesting, carrying with it a limited amount of authenticity. Its use as a reference book, while limited, is justified and is definitely a step in the right direction of trying to make available for those who know little about it some phases of the relationship of crime to psychiatry.

Practical Methods in Biochemistry. By Frederick C. Koch, Director of Biochemical Research, Armour & Co., Chicago, and Martin E. Hanke, Associate Professor of Biochemistry, University of Chicago. Fourth edition. Cloth. Price, \$2.25. Pp. 353, with 20 illustrations. Baltimore: William Wood & Company, 1943.

This edition presents the more important qualitative and quantitative aspects of cell constituents, of cell activities and of the composition of blood, secretions and excretions. The book is divided into three parts: (1) the chemistry of cell constituents, (2) the chemistry of the digestive tract and (3) blood and urine. Part 1 contains chapters dealing with carbohydrates, lipins, proteins and amino acids, nucleoproteins and nucleic acid, and hydrogen activity and pH . Part 2 contains chapters devoted to salivary digestion, gastric digestion, intestinal digestion and bile. Part 3 has chapters on blood and hemoglobin, the quantitative analysis of blood, the quantitative analysis of urine, the chemical examination of urine for pathologic conditions, colorimetric methods for vitamins, and chemical tests for hormones. With each quantitative method are given the principle, the reagents and the actual procedure. The book could be considerably enriched by adding to each method a paragraph or two with biologic normals and clinical interpretations. The chapter on vitamins gives quantitative procedures for tissues and foods, but no such procedures for blood and for urine, which could have easily been incorporated. It is also to be regretted that spinal fluid is altogether left out of consideration. It is to be hoped that in the next edition clinical interpretations will be added as well as a chapter on spinal fluid, and that the chapters on vitamins and on hormones will be expanded to include quantitative methods for blood and urine.

The book is written in an exceptionally clear and fluent style, and the directions for various qualitative and quantitative procedures are simple, free from ambiguity and easy to follow. Explanations are freely used. The most valuable chapter in the book is the one discussing hydrogen activity and pH . This subject is put before the student in the most illuminating manner, and the simple experiments in this chapter serve to illustrate fundamental principles. The superiority of the book lies in the choice of up-to-date subject matter. Many manuals published

continue to describe the same qualitative and quantitative procedures that have been used for thirty years or longer and fail to take into consideration new and more sensitive or more accurate methods. Koch and Hanke's book is replete to an agreeably surprising degree with the latest and best methods. Here is a book that is no longer a rehash of the old and the hoary in biochemical technic. Even the ordinary colorimeter has disappeared in the book to be altogether replaced by the more accurate photoelectric colorimeter, in which the personal equation is completely canceled out. The book is highly recommended and should be in the hands of every medical student, clinical pathologist and internist who desires to keep up with advances in the pure sciences intriguingly bound up with medical progress.

Elements of Electrocardiographic Interpretation with Forty Plates Illustrating the More Important Deviations from the Normal, Selected from the Files of the Michael Reese Hospital. By Louis N. Katz, A.M., M.D., Director of Cardiovascular Research, The Michael Reese Hospital, Chicago, and Victor Johnson, Ph.D., M.D. Third edition. Paper. Price, \$1. Pp. 44, with 40 illustrations. Chicago: University of Chicago Press; London: Cambridge University Press, 1944.

P-Q-R-S-T: A Guide to the Interpretation of Electrocardiograms. By Joseph E. F. Risenman, M.D., Associate in Medicine, Harvard Medical School, Boston. Fabrikoid. Price, \$1.50. Pp. 28, with 55 illustrations. Boston: The Author, 1944.

The value of the former booklet is established. The well chosen electrocardiograms, with adequate legends, illustrate the normal and abnormal mechanisms of the heart beat. "The Genesis of the Electrocardiogram" is new and helpful. Additions to the "Table of Characteristics of the Normal Electrocardiographic Cycle," plates illustrating the types and progressive changes of infarction and an illustrated discussion of chest leads are timely. The valuable "Procedure in Reading Electrocardiograms" is retained. The booklet provides useful supplementary material for students and practitioners.

The second booklet, of attractive format, is a detailed outline of graphic abnormalities (illustrated by drawings rather than actual electrocardiograms) and as such is of greatest value to the author.

The Safe Installation and Use of Abrasive Wheels. International Labour Office, Studies and Reports, Series F, Second Section (Safety), No. 9. Paper. Price, \$1; 4s. Pp. 175, with illustrations. Washington & Montreal: International Labour Office; London: P. S. King & Staples, Ltd., 1944.

Grinders are exposed principally to injury arising from breakage of revolving abrasive wheels. Most commonly reported accidents are foreign bodies in the eye, burns and abrasions, or injury arising from contact with unprotected parts of the machine. This booklet, intended primarily for safety engineers, will, however, be a useful source of reference to physicians who encounter accidents of this type or who are called on to recommend improved health or safety measures. Complete data are presented about storage, proper wheels for particular work, speed of operation and stresses involved therein, mounting of the wheel and the precautions which workers must observe. Guarding receives exceptionally thorough treatment. Goggles or face screens need to be worn or transparent screens should be installed on the machine itself to protect the operator against sparks or dust. Local exhaust ventilation is regarded as the most reliable method of removing excessive concentrations of dust.

Rebel Without a Cause . . . The Hypnoanalysis of a Criminal Psychopath. By Robert M. Lindner, Ph.D., Psychologist, United States Penitentiary, Lewisburg, Pa. Introduction by Sheldon Glueck, LL.B., Ph.D., Professor of Criminal Law and Criminology, Law School, Harvard University, Boston, and Elcanor T. Glueck, Ed.D., Research Criminologist, Law School, Harvard University. Cloth. Price, \$4. Pp. 296. New York: Grune & Stratton, 1944.

This entire book is written around the partial contents of forty-six hours of hypnoanalysis of a criminal psychopath. Preceding the single case report the author makes a few general remarks about the nature of psychopathic personalities and their evolution. To this subject his discussions add nothing new. The method of hypnoanalysis is then outlined and many current misconceptions are negated. In this discussion the positive contributions are worth studying, but the author's gratuitous

ridicule of other methods is distracting. Then come 260 pages of case history and details of forty-six hours work. This is given in great detail, although of necessity abstracted to some degree. Page after page of the patient's production are cit with only an occasional question from the therapist. In the later hours the author became more curious and asked more questions and makes a few interpretations. One misses the analytic work of the therapist until the last hour, when a total explanation of the case is briefly given. This concerns a traumatic incident that occurred in infancy: "You were between 6 and 8 months old." The night before the child had been frightened by a dog in a motion picture. The next morning the patient saw his father having intercourse with the mother and his penis looked like a strange and vicious animal. The child knew he wasn't supposed to see all this. At breakfast he was frightened and cried. "Now the fear of your father's penis—and all it meant—followed you through all your life." To this traumatic incident the patient's lifelong nystagmus, amblyopia and ptosis and his psychopathy are attributed. The reviewer can make no comment regarding this claim except to point out that if a child of 6 months is able to grasp such a set of circumstances much indeed has been learned. A short summary follows in which the author states, "In short, hypnoanalysis is a radically abbreviated method for the investigation of the personality and the treatment of psychogenic disorders and aberrations of behavior."

Recent Advances in Anesthesia and Analgesia (Including Oxygen Therapy). By C. Langdon Hewer, M.B., B.S., D.A., Senior Anesthetist, St. Bartholomew's Hospital, London. Fifth edition. Cloth. Price, \$5.50. Pp. 343, with 141 illustrations. Philadelphia: Blakiston Company, 1944.

That a fifth edition of this invaluable manual should appear within two years of the publication of the fourth is a well merited tribute to its excellence. A good and fair description of "controlled respiration" has been added to the first chapter. The author has wisely modified his previous statement as to the effect of trichlorethylene on cardiac rhythm and now admits that arrhythmia occurs. A section dealing with wounds involving the mouth has been added to the chapter on anesthesia for oral operations, and anesthesia for thymectomy is considered in the chapter on thyroidectomy. A new chapter has been added on anesthetic charts and records, and the addition is timely and wise. To the professional anesthetist the book is indispensable because of the care and discrimination with which the references are selected, for the latter make the book a "starting point" for almost any investigation. In spite of the additions the book is not larger than before, and the printing and binding are astonishingly good in view of the prevailing restrictions. All anesthetists are indebted to Dr. Hewer's industry and learning for a work which is of vital importance to them.

The Art of Resuscitation. By Palmer J. Flagg, M.D., Chairman, Committee on Asphyxia, American Medical Association. Cloth. Price, \$7. Pp. 453, with 176 illustrations. New York: Reinhold Publishing Corporation, 1944.

This volume, as the author states, is an attempt, based on more than twenty-five years of intimate experience with the unconscious patient, to tell the reader what to do when faced by an acutely asphyxiated patient about to die. The author has gathered together the essence of the papers that have been published on the subject of asphyxia and of resuscitation. He has spoken about it historically and from experimental and clinical points of view and has described asphyxia due to a variety of conditions and circumstances. His hobby, pneumatology, is described and recommended. He has covered asphyxia from the fetus to the death of the adult. There are a number of illustrations to assist in making his various points. An extensive bibliography precedes the index. Almost all methods of artificial respiration, both manual and mechanical, are illustrated. Most physicians should be more interested in artificial respiration than they are at present. The author emphasizes the important point that most physicians are not interested in artificial respiration and would prefer to call the fire department rather than to know how to do it themselves, and that this is an unhappy situation. He has done all he can to remedy this situation by preparing this book.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ETIOLOGY OF INFECTIOUS HEPATITIS FOLLOWING YELLOW FEVER VACCINE

To the Editor:—In the literature on jaundice as caused by yellow fever vaccine which contained human serum, the latter has been said to be the probable source of the icterogenic virus or substance responsible for the hepatitis. Since human serum has been suspected in this connection, I am curious to know whether any similar increased incidence of infectious hepatitis has been noted in persons who have merely received transfusions of whole blood, especially during the subsequent three to twelve months interval? Would not such a statistical study decide definitely whether this icterogenic factor in serum was or was not at fault in the post-vaccinal jaundice?

Captain, M. C., A. U. S.

ANSWER:—There has not been any increase in the incidence of infectious hepatitis following transfusion of whole blood, or of serum or of plasma of similar magnitude to that following yellow fever vaccine. Studies of this incidence have not by themselves been conclusive in incriminating the normal serum which previously was included in yellow fever vaccine. There have been, however, some instances, with probable causal relationship, in which infectious hepatitis followed such transfusions after long intervals similar to those which occurred between injections of certain lots of yellow fever vaccine in 1942 and the appearance of jaundice. A possible explanation of the difference in incidence is that in the case of the yellow fever vaccine exceedingly small amounts of pooled normal human serum were used, around 0.04 cc. per dose: in such a small amount of serum an infecting dose of the hypothetical virus might be present without there being available an effective amount of accompanying specific antibodies which a larger dose of serum or blood would be likely to contain. Moreover, the very small amount of serum in the vaccine implies that a given icterogenic pool containing the serum of an infrequent human carrier would be distributed among thousands of doses of the vaccine. It has been noted also that certain pools of convalescent serum against mumps and measles, when given in considerable volume, produce numerous cases of infectious hepatitis, perhaps because they do not happen to contain an appreciable amount of specific antibody. In any event the evidence of the presence of an icterogenic virus in the blood of occasional human carriers is rapidly growing. The infection has been transferred to human volunteers by inoculation of serum in cases of postinoculation and other types of infectious hepatitis. Moreover, jaundice has ceased to appear in the large number of persons who have been vaccinated against yellow fever since serum was omitted in the manufacture of the vaccine. As susceptible species other than man have not been discovered, the proof of the etiology of postinoculation infectious hepatitis has not been completed by the isolation of the agent. Much, however, is already known about the supposed virus: it is filtrable and unusually resistant to heat, withstanding 56 C. for an hour.

LARGE DOSES OF ASCORBIC ACID

To the Editor:—Can you give me any information as to the toxic effect of continued large doses of ascorbic acid (600 to 1,000 mg. daily)? An adult patient took up to 1,000 mg. of ascorbic acid daily on his own initiative for relief of hay fever. He observed that he was free from migraine headaches, which had previously occurred three or four times a month for almost fifteen years. The patient is anxious to know whether he can safely continue to take this large amount of ascorbic acid. M.D., New York.

ANSWER:—There is little danger of harm resulting from large doses of vitamin C. Repeated doses of this vitamin have been administered to adults in amounts of 1 to 6 Gm. orally and intravenously without evidence of toxic action. Daily doses of 1 to 3 Gm. over an extended period caused no undesirable effect. In infants and children vagotonic effects such as fatigue, slow pulse, increased intestinal peristalsis and hyperemia have been noted with the use of maximal doses of vitamin C. This has been considered by some to be a sensitivity rather than a toxic manifestation.

The dose mentioned in the inquiry is not excessive and should cause no harmful effect.

SUBSTANCES USED TO INHIBIT CORROSION IN BOILERS

To the Editor:—Is it safe to use "Corradicide" or "Coraval" in hot water boilers from which steam goes to direct contact with food in pressure cookers? "Corradicide" is supplied by the Metropolitan Refining Company of New York and "Coraval" is a product of the Western Chemical Company of Kansas City.

Arthur E. Wade, M.D., Seattle.

ANSWER:—Modern practice in the prevention of scaling and corrosion in boilers and hot and cold water systems makes use of a wide variety of organic and inorganic substances, including a small number of materials that may be volatilized and carried throughout the entire system along with steam. These inhibitor materials include zinc, manganese and chromium salts, soluble silicates such as sodium and ethyl, pyrophosphate, hexametaphosphate, sodium septaphosphate, trisodium and disodium phosphate, sodium carbonate and amines. Not all of these substances reach foods subjected to pressure and heat from steam created in a boiler containing these substances. Many appliances, such as steam tables, produce heat or steam without any direct connection with the steam generated in the primary boilers. Whenever practical, that type of device making use of secondary systems is preferred. Frequently claims are made that corrosion inhibitors are nonvolatile and therefore never reach steam. Theoretically, at least, many substances labeled as nonevaporable are carried along with steam. This is well exemplified in the necessity for triple distillation of distilled water for certain highly technical purposes.

The two substances specified in the query are chemically highly dissimilar. "Corradicide" primarily is intended for use in hot or cold water supply systems and not in boilers. The formula for this inhibitor is not fixed but is based on the analysis of the particular water to be treated. The formula commonly includes trisodium phosphate, disodium phosphate, sodium carbonate and sodium silicate. None of these substances are toxic in small quantities. However, its manufacturers produce and market another inhibitor, named "Corrodine," which is a volatile liquid and which might reach pressure cookers. This material is introduced into boilers but is not specified by the manufacturer for use when steam comes in contact with food-stuffs.

"Coraval," a volatile substance and intended for the lines of the system only, represents one or more amines. The nature of the application of "Coraval" is such that, in small quantities, foods in pressure cookers directly connected with boilers making use of this inhibitor and persons in such steamy atmospheres may be in the presence of traces of this amine or these amines. It is probable that due safeguards already have been provided. Any foods cooked in the presence of abnormal quantities of this amine would not be sapid nor would water be potable. Moreover, the quantity requisite to adequate anticorrosion purposes is so low that any quantity escaping into a pressure cooker or into the atmosphere under normal operating conditions would be so low that injurious effects would be unlikely. In short, when dangerous quantities might be present, odor and taste would serve as warnings. Not all amines possess offensive odors, as is well attested through common experience of users of many brands of brushless shaving creams, which substances contain amines. On the other hand, the highly offensive odors of decomposing fish are partly due to the putrefactive formation of trimethylamine. Some amines also are skin irritants, such as the well known paraphenylenediamine, the much used photosensitive fur dye.

It appears that "Corradicide" is not sponsored by its manufacturers for steam systems and therefore when properly used may be ruled out as a source of prospective injury under the circumstances of the inquiry. "Coraval," an amine or mixture of amines, is a caustic skin irritant in high concentration and a convulsive poison after hypodermic introduction in such quantities as 0.5 Gm. per kilogram of body weight. It appears to be lacking in dangerous properties when administered by mouth in dilution in such doses as 100 mg. per kilogram of body weight daily. Such quantities under normal usage of "Coraval" are unlikely to reach food or food workers. Moreover, any accidental major exposures probably would be accompanied by disturbing odors and tastes.

Both of the manufacturers concerned cooperated in furnishing information conducive to the proper appraisal of this problem.

References:

- Dreyfus, M. E.: Controlling Corrosion in Steam and Return Lines, *Power Plant Engin.*, April 1938, p. 274.
Dreyfus, M. E.: The Application of Organic Amines to Steam Systems, *Heat. & Vent.*, June 1942, p. 31.

EXERCISES FOR RELIEF OF DYSMENORRHEA

To the Editor:—There have been recent reports of the large scale use of the so-called Billig exercise for dysmenorrhea and of the extremely favorable results of its practice at the University of California, in the Los Angeles City School System, in the Consolidated Vultee Aircraft Corporation and elsewhere. A report in the September 1943 issue of *Industrial Medicine* by A. C. Dick and others gives the following explanation regarding the exercise: "Treatment is based on the discovery that in women with dysmenorrhea there is a postural defect of contracted fascial ligamentous bands restricting posterior tilt excursion range of the pelvis in relation to the legs and back. At menstruation (with the change in ovarian hormone level) the ligaments further shorten, causing impingement with irritation of the peripheral spinal nerves passing through and by them. The nerves usually irritated are one or more of the following: 11th dorsal, 12th dorsal, 1st lumbar and their branches, the ilioinguinal and iliohypogastric. The impingement gives rise to symptoms of pain in the low back in the region of irritation or in the region of distribution of these nerves in the lower abdominal wall and groin, or both. Factors influencing the contracture of the ligaments are varied. Treatment consists in freeing the nerves of their impingement by correcting the postural defect. This is done through precise ligamentous stretching exercises carried out by the patient routinely to progressively, accumulatively lengthening the ligaments involved." The Harlan Shoemaker Fund for Paralytics furnishes a 16 mm. film of the exercise and is apparently sponsoring similar exercises for other painful conditions. Is the explanation offered of the mechanics of menstrual pain and its alleviation by exercise physiologically acceptable? Is there any corroborating evidence of the value of such an exercise?

M.D., New York.

ANSWER.—It has not been proved that in all or most women with primary dysmenorrhea "there is a postural defect of contracted fascial ligamentous bands restricting posterior tilt excursion range of the fibers. . . ." Likewise there is no proof that at menstruation the ligaments further shorten, impinge and irritate the peripheral spinal nerves enumerated in the query. Furthermore, it has not been shown that there is any connection between impingement and irritation of the peripheral spinal nerves and dysmenorrhea. The part of the nervous system which is definitely associated with painful menstruation is the sympathetic nervous system, particularly the part usually referred to as the presacral nerves. The operation of presacral neurectomy has relieved the vast majority of patients with dysmenorrhea for whom it has been tried.

H. E. Billig Jr. (*Arch. Surg.* 46:611 [May] 1943) and A. C. Dick, H. E. Billig Jr. and H. N. Macey (*Indust. Med.* 12:588 [Sept.] 1943) claim excellent results in cases of dysmenorrhea from the use of the special exercises. During the first ten months of installation of the exercises 70,000 absentee hours were eliminated and there was an 80 per cent reduction in the use of menstrual cramps as an absentee excuse. Also 70,000 decreased efficiency hours were eliminated. Another favorable report was written by Esther Gilman (*J. Health & Phys. Educ.* 15:377 [Sept.] 1944). In view of the favorable results described, if there was not a large psychic factor involved, some other reason for the benefits must be sought than that given by the proponents.

LEUKOCYTE PICTURE IN MALARIA

To the Editor:—In this Carolina coast town, we have a certain amount of malaria, both acute and chronic. This summer, in the laboratory, we have obtained a series of blood counts like this: There is usually an increased total number of white cells, running about twelve or thirteen thousand; in the differential Schilling count, there is a high proportion of young cells, running as high as 30 per cent of the total number of polymorphonuclear cells counted; the overall total of the polymorphonuclear cells is little or not at all above the normal 70 per cent; there may be definite increase to around 30 to 40 per cent in the lymphocyte series. With this count we frequently find plasmodia. These patients usually have slight or definite fever and usually complain of dizziness and malaise, but they are not particularly toxic. They definitely are not as sick as one would expect from the pronounced shift to the left as seen in severe infections. Has this sort of blood count been noticed by other workers in the field of malarial diagnosis?

Joseph R. Latham, M.D., New Bern, N. C.

ANSWER.—The characteristic white blood cell picture in acute malaria consists in an increased total count during the actual onset, but as soon as the attack reaches its maximum, either clinically or by the appearance of an increased number of infected red blood cells, and thereafter to and during the quiescent interval until the next onset, the count decreases to normal or even to 5,000 or less. In chronic malaria there is usually a leukopenia, with a deficiency in the neutrophils. Almost invariably there is a monocytosis, with an increase in the number of monocytes and lymphocytes, and in acute infections there may be an appreciable number of wandering histiocytes.

American and British textbooks make no specific mention of the Schilling count, but Mühlens, Nauch, Vogel and Ruge (*Krankheiten und Hygiene der warmen Länder*, ed. 4, Leipzig, Georg Thieme, 1938, p. 82) state that during attacks there is a

shift to the left in the Schilling count, as observed by V. Schilling himself (1924), with the appearance of juvenile forms and metamyelocytes. Moreover, Böhm (1918), Newham and Duncan (1924) and Beregoff (1934) have also observed stab or band forms in severe infections; Winfield (1932) has reported a shift to immature stages proportional to the severity of the disease. Schilling found that even between attacks, when the neutrophils were greatly diminished, stab forms might still be present, indicating a severe drain on the granulocyte-forming tissues.

In severe infections both monocytes and mature neutrophils frequently have ingested malaria pigment and parasites of all stages. Owing to increased phagocytic activity of the large monocytes and a consequent increase in their production, the proportion of these cells to the total white cells may reach 30 per cent. In the absence of other diseases of the blood stream and blood-forming organs, a monocytosis of 15 to 20 per cent with an associated leukopenia is suggestive of malaria, while 8 per cent or less of large monocytes is presumptive evidence of freedom from malaria.

Although there is considerable difference in individual observations, the following changes in the white blood cell picture are characteristic of malaria: there is a relative and sometimes an absolute increase in the number of large monocytes. There may be a leukocytosis, particularly if the discharge of parasites from destroyed red blood corpuscles is heavy; but if the parasites are scant there may be no increment in the total number of white cells. Usually, but not invariably, the periods between attacks are characterized by leukopenia with monocytosis.

PENICILLIN FOR SCARLET FEVER

To the Editor:—A healthy white boy aged 6 years contracted fairly severe scarlet fever with rectal temperatures reaching 104 to 106 F. on the fourth day, pronounced asthenia and severe multiple synovitis. Since I anket he had been given adequate doses of sulfadiazine and small doses of acetylsalicylic acid for the control of the fever and the arthralgia. The parents refused serum "because it harms the heart." On the fourth day after the appearance of the rash I decided to suspend all other medication and injected 5,000 units of penicillin every three hours. At the second injection the fever started to diminish and the boy's temperature became normal the following day. But the most surprising effect was that on his joint pains; these seemed to disappear under the influence of the penicillin. I realize that care must be taken in order to avoid "post hoc ergo propter hoc" judgment. However, my understanding is that the temperature in scarlet fever does not return to normal by crisis but by lysis, and in this instance it returned by crisis. On the other hand I do not believe that the high fever could be attributed, even partly, to the sulfadiazine, because the patient kept on taking it during the fourth day, in spite of my order to stop it, and yet the temperature went down. Aside from some traces of albumin, the urine was normal all the time. The diagnosis of scarlet fever in this patient was established firmly. As far as I know, penicillin has not been used in scarlet fever so far.

Mordoch I. Solomon, M.D., Bronx, New York

ANSWER.—It is unusual for a scarlet fever patient to develop multiple synovitis as early as the fourth day of the disease. In the presence of such a complication one would be justified in prescribing sulfadiazine, which, however, is of little or no value for subduing the toxemia of scarlet fever. Although the dosage of sulfadiazine is not stated, it does not seem probable that this drug was responsible for the elevated temperature in the case discussed. Following the administration of scarlet fever antitoxin or human convalescent scarlet fever serum, the temperature commonly falls by crisis. At present, scarlet fever in general is exceptionally mild and has been so for the last few years. Possibly on that account penicillin has been somewhat neglected for this infection. However, penicillin has been given successfully for the treatment of complications of scarlet fever.

ROTARY NYSTAGMUS

To the Editor:—The reply to an inquiry about rotary nystagmus published in *The Journal*, Jan. 27, 1945, page 252, concerned a Negro woman aged 42 who had rotary nystagmus of uncertain duration, possibly about twenty-five years, and who had no other symptoms. The reply stated that rotary nystagmus may be congenital and that it occurs in defective vision and ocular muscle weakness. On the contrary, in these conditions the nystagmus is horizontal, not rotary. Rotary nystagmus does occur in acute conditions of the inner ear, as stated in the reply, but is of short duration and is accompanied by vertigo, conditions specifically eliminated in the query. Finally, the statement that rotary nystagmus is not a sign of organic disease of the central nervous system is questionable. It is an excellent sign of such disease. The isolated finding of rotary nystagmus probably indicates a small lesion in the vestibular or vestibulo-cerebellar tracts or their nuclei. In the absence of other findings one cannot say more. If old, it may be residual of a small inflammation or lesion. If recent, one might suspect the presence of a plaque of disseminated sclerosis.

C. Wilbur Rucker, M.D., Rochester, Minn.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 127, No. 12

CHICAGO, ILLINOIS
COPYRIGHT, 1945, BY AMERICAN MEDICAL ASSOCIATION

MARCH 24, 1945

A NONSUTURE METHOD OF BLOOD VESSEL ANASTOMOSIS

EXPERIMENTAL AND CLINICAL STUDY

ARTHUR H. BLAKEMORE, M.D.

AND

JERE W. LORD JR., M.D.

NEW YORK

In the early spring of 1942 we directed our efforts in search of a simple and yet efficient method of anastomosing damaged (severed) arteries adaptable to war use. An early start seemed timely. An opportunity would thus be afforded to indoctrinate those few basic principles in blood vessel surgery without which no technic of blood vessel anastomosis could possibly succeed when employed on a large scale, however simple in its execution.

The anatomic arrangement of collateral blood vessels in relation to main arteries in human extremities is such that war missiles causing damage to main arteries, of necessity, cause more or less damage to collateral vessels. There is, unfortunately, an anatomic limit to the number of collateral vessels that can be damaged and yet have a limb survive ligation of a damaged artery.

In this war, then, with effective treatment for shock, control of infection and vasospasm—adjuncts known to promote the blood carrying capacity of undamaged collaterals—a limb survives or dies following ligation of a damaged main artery in direct accordance with the number of collateral vessels remaining anatomically intact.

It is important to remember that successful restoration of blood flow by anastomosis is the one and only certain method of preventing the occurrence of anemic necrosis; collateral blood flow at its undamaged best can deliver but a small fraction of the minute volume blood flow that passes through a patent (anastomosed) main artery.

Extensive damage to collateral blood vessels was conceded to be an outstanding feature of the shrapnel extremity wounds of World War I. The great expansion of high explosive warfare in the form of land mines, grenades, fragmentation shells, aerial bombs and rocket shells in this war made it seem likely that there would

be a preponderance of wounds characteristically destructive of collateral blood vessels.

In fact, before we had proceeded far in the European phase of World War II, British¹ and other reports² called our attention to both the very high incidence of high explosive wounds and the certainty with which gangrene followed ligation of damaged main arteries.

The control of infection and blood clotting³ assures the success of blood vessel anastomosis and hence the control of blood flow. The elimination of devitalized tissue by débridement, the control of infection and an adequate supply of blood constitute a basic triad on which successful salvage of wounded extremities with main artery damage depends. Restoration of a pulsating normal volume blood flow by anastomosis revitalizes damaged tissues. It is a fact that damaged, anemic tissues afford a peculiarly favorable medium for the development of gas bacilli. Likewise a diminished blood flow disposes to the development of bone infection and delays bone union and the healing of wounds in general.

A NONSUTURE METHOD OF BLOOD VESSEL ANASTOMOSIS⁴

Starting with the ancient method of restoring blood flow through severed arteries, of which there is none simpler than tying the cut ends of a vessel over the ends of a connecting cannula, we added the principle of lining the cannula with a vein graft.

1. Farbank, H. H. T.; Gordon-Taylor, G., and Page, C. M. *Emergency Amputations*. War Med. 2: 147-153 (Jan) 1942.

2. The percentage of cases in which gangrene followed ligation of damaged main arteries reported from the IXth Evacuation Hospital during the Tunisian campaign was 70 per cent average for all arteries, and not a single instance of salvage following ligation of a damaged popliteal artery. Gen. W. H. Ogilvie, chief consultant to the British forces throughout the African campaign, in a personal interview stated that, "in spite of the employment of sympathetic nerve block and other adjuncts, the incidence of gangrene following ligation of damaged main arteries was far higher than that reported by Sir George Makins for World War I." He likewise stated that there had not been a single instance of salvage following ligation of a damaged popliteal artery. A war experience commentary of these statistics was revealed to Dr. Allen O. Whipple during a tour of the North African front in September 1943. Dr. Whipple recorded 8 cases with popliteal artery damage in which the leg was saved in only 1.

3. Murray (Heparin in the Surgical Treatment of Blood Vessels, *Arch Surg.* 10: 307-325 [Feb] 1940) demonstrated that the efficiency of Carrel suture anastomosis in clean wounds is boosted from 35 per cent to 100 per cent by the continuous administration of heparin for a few days by intravenous drip. The credit for making the use of heparin practical under war conditions, however, must go to Dr. Leo Loewe and his associates (Loewe, L.; Rosenblatt, P., and Lederer, M.: A New Method of Administering Heparin, *Proc. Soc. Exper. Biol. & Med.* 50: 53 (May) 1942). These investigators have proved that safe, continuous heparinization may be maintained for weeks at a time following the subcutaneous deposit, at forty eight hour intervals, of heparin in Pitkin's menstruum. The latter permits a more even release of heparin than is practical to attain by the intravenous drip method. Hence, with the standardization of dosage, it is now practical to administer safe, automatically controlled, surgical heparinization in cases of wounds of the extremities at the field hospitals near the battle front without even the necessity of doing a blood clotting time.

4. Blakemore, A. H.; Lord, J. W., Jr., and Stefko, P. L. The Severed Primary Artery in the War Wounded: A Nonsuture Method of Bridging Arterial Defects, *Surgery* 12: 488-508 (Sept.) 1942; Restoration of Blood Flow in Damaged Arteries: Further Studies on a New Method of Blood Vessel Anastomosis, *Ann. Surg.* 117: 1-11 (1943). 3. Effect of Sulfathiazole Administered Orally and on Contaminated Wounds. *Experimental* (Oct.) 1943. 11: 352-356.

Read before the Surgical Section of the Academy of Medicine, New York, Dec. 1, 1944.

From the Departments of Surgery, Presbyterian Hospital, Columbia University College of Physicians and Surgeons, and the New York Hospital, Cornell University Medical College.

Owing to lack of space, this article is abbreviated in THE JOURNAL by shortened case reports and omission of measures contributing to the success of the method. The complete article appears in the authors' reprints.

Most of the experimental work described in this paper was done under a contract, recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and the Cornell Medical College.

It is of interest that paraffin coated cannulas were used, on occasion, by Professor Tuffier⁵ in World War I, and not entirely without success in spite of the absence of modern chemotherapeutic control of infection and blood clotting.

We selected vitallium, an alloy,⁶ as a suitable material from which to make cannulas or tubes. This metal may be left in tissues for indefinite periods without causing objectionable irritation. To facilitate bridging arterial defects of any length we recommend an identical technic employing a vitallium tube on each end of the vein graft.

silk placed behind the tying ridges. To prevent blood from passing between the vein and artery intimas a fine silk ligature is tied, just snug, 1 or 2 mm. from the end.

The method affords a broad vein intima to artery intima contact for healing. The holding ligature is well away from the flowing blood. In the presence of bacterial contamination this type of junction would seem to offer an advantage over the suture junction in that in the latter the vessel wall encompassed in the suture line, and thereby somewhat strangulated, lies in direct contact with the flowing blood. The joint is leak proof in the presence of anticoagulant therapy.

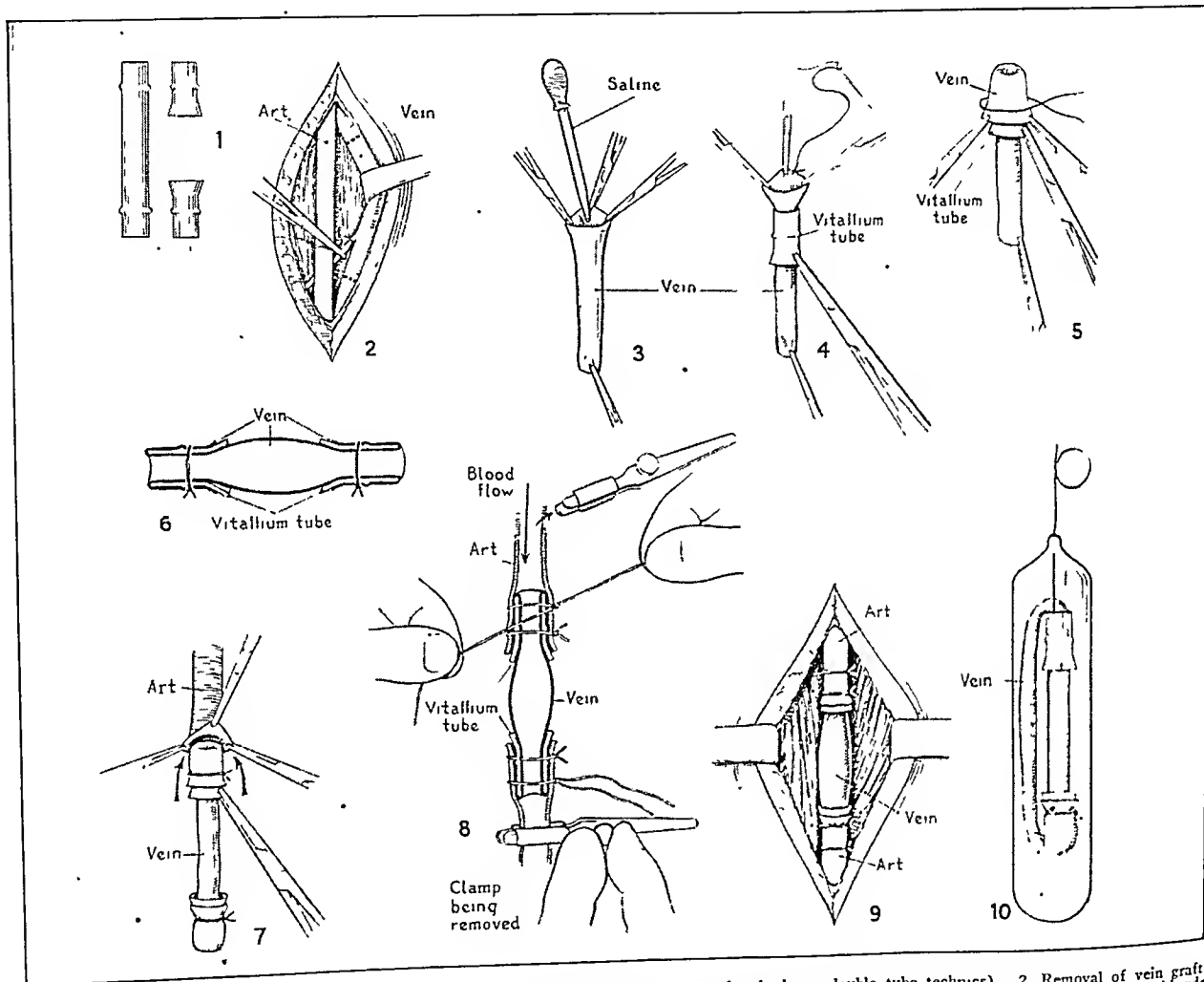


Fig. 1.—Operative technic of nonsuture method. 1. Cannula and tubes (for use in single or double tube technics). 2. Removal of vein graft; note that the branch is tied close to the vein with fine silk before clamping. 3. Irrigation of vein graft with isotonic solution of sodium chloride, to which a small amount of heparin may be added if desired. 4. Method of triangulating end of vein with mosquito clamps. 5. Cuffing and securing of end of vein on the vitallium tube. 6. Double tube technic with the vein graft mounted. 7. Introducing the distal end of the vein graft everted end of vein on the vitallium tube. 8. Tying fine silk ligatures just snug to prevent blood from penetrating between the vein and the artery intimas. Also releasing the proximal rubber shod clamp first to facilitate the passage distalward of any residual air bubbles within the graft. 9. Completed anastomosis: the perivascular tissues are closed snugly around the anastomosed artery when possible. 10. A convenient way of preserving, hermetically sealed in an ordinary test tube, a vein graft for quick freezing. The graft is moistened with isotonic solution of sodium chloride, one end mounted on a vitallium tube in the usual manner; the other end is passed through a second tube and brought over the first tube to protect the intima until used. A wire serves to suspend the graft.

Figure 1 illustrates the technic. The ends of the vein graft are everted (cuffed) over the ends of the cannula or tubes and secured by fine silk ligatures placed behind tying ridges 4 or more millimeters from the ends of the cannula or tubes. The cut ends of the artery are then brought over the vein covered ends of the cannula or tubes and secured by ligatures of heavy

But, on the other hand, because of blood to intima contact only, the anastomosis affords little or no stimulus to thrombus initiation when the blood clotting time is normal.

5. Tuffier, M.: De l'intubation dans les plaies des grosses artères. *Bull. Acad. de méd., Paris* 74:455-460, 1915; A propos des plaies des artères. *Bull. et mém. Soc. de chir. de Paris* 43:1469-1471, 1917.

6. The approximate composition of vitallium is cobalt 65 per cent, chromium 30 per cent and molybdenum 5 per cent. The tubes were supplied by the Austenal Laboratories, Inc., of Chicago and New York.

Experiments.—Employing no anticoagulants, silk technic throughout, the small femoral arteries of dogs were selected for testing the efficiency of the nonsuture method for the following reasons: 1. Abundance of experience has shown that suture anastomosis of the femoral arteries of dogs, with or without the use of vein grafts, fails as often as it succeeds even

when undertaken by skilled operators employing rigid aseptic precautions, whereas the same technic may be employed to anastomose the aorta or carotid with fairly regular success.

2. A review of the literature on the subject of methods employing a nonsuture prosthesis for the anastomosis of blood vessels reveals not a single instance of success in bridging defects of the femoral artery in dogs, using vein grafts.

With careful attention to details of technic, asepsis and the use of a generous segment of femoral vein from the opposite leg, our nonsuture method affords a 90 per cent expectance of success in bridging defects of the small femoral arteries of dogs and without the use of anticoagulants.

We have explored anastomoses of the small femoral arteries of dogs up to sixty-nine days and found them patent. Figure 2 is a photomicrograph of the artery vein junction following removal of the cannula in a single tube vein graft anastomosis patent thirty-five days after operation. Note the excellent healing at the artery vein junction. The vein graft appeared healthy and well nourished throughout. This is of interest in that the vein graft, in the single tube technic, lies within the vitallium cannula entirely isolated from the perivascular tissues.

As would be expected with larger vessels, the method was used to anastomose the abdominal aortas of dogs, using external jugular vein grafts and the two tube technic, with regular success. Three animals were observed for a period of eight months. On exploration the anastomoses were patent and the vein grafts were not dilated. The walls were somewhat thickened and had every appearance of being healthy.

ANASTOMOSIS OF BLOOD VESSELS IN CONTAMINATED WOUNDS

Because of widespread bacterial contamination of vascular injuries in the war wounded, it seemed important to study the efficiency of the nonsuture method using the double tube technic in contaminated wounds in comparison with the Carrel suture method of anastomosing arteries.

Method.—Delayed anastomoses of femoral arteries were made through dirty, open wounds, in dogs, six and twenty-four hours after unsterile ligation and section. The arterial defects were bridged with free femoral vein transplants. No anticoagulants were employed.

The study embraced five series of animals, affording an observation on ten or twenty anastomoses per series. Sulfanilamide 1.5 Gm. was placed in alternate wounds throughout. Sulfathiazole 1 Gm. was given by mouth twice daily to dogs in two series: one Carrel suture and one nonsuture series. Irrigation of the wounds with saline solution was carried out in one Carrel suture and one nonsuture series, whereas in the remaining three series careful débridement of the wounds was carried out at the time the anastomoses were performed.

Results.—The success of the Carrel suture technic was boosted from 10 per cent to 40 per cent by the performance of débridement and the use of sulfonamides. In general, however, the study confirms what has long been known; namely, the low efficiency of the suture method of anastomosing blood vessels in contaminated wounds. Cultures taken at the sites of failure (thrombus, site of secondary hemorrhage and aneurysm) invariably revealed bacterial growth.

The interesting results, using the double tube, nonsuture method in twenty-four hour delayed anastomosis of femoral arteries in contaminated wounds invited analysis and comparison with the entire group. In

the first place, anastomosis of arteries in contaminated wounds offers a sensitive index of the bacterial status and the relative efficacy of measures for the control of infection. For example, comparing results of anastomoses in the six hour contaminated wounds with the twenty-four hour wounds of beginning bacterial invasion, a "fall off" of 25 per cent successes occurred in the latter in spite of débridement of the twenty-four hour wounds versus simple irrigation in the six hour wounds. In respect to débridement, however, of the thirteen delayed anastomoses receiving sulfanilamide locally, but without débridement, there were thirteen failures (100 per cent), whereas in twenty-four hour delayed nonsuture anastomoses success followed débridement alone in 30 per cent of the cases. On the other hand, the 30 per cent successes with débridement alone was boosted to 60 per cent successes by the oral administration of sulfathiazole and finally to 85 per cent successes with the addition of sulfanilamide in the wounds. These findings are in accord with war experience to date; namely, that débridement greatly enhances the effectiveness of the sulfonamides in contaminated wounds.

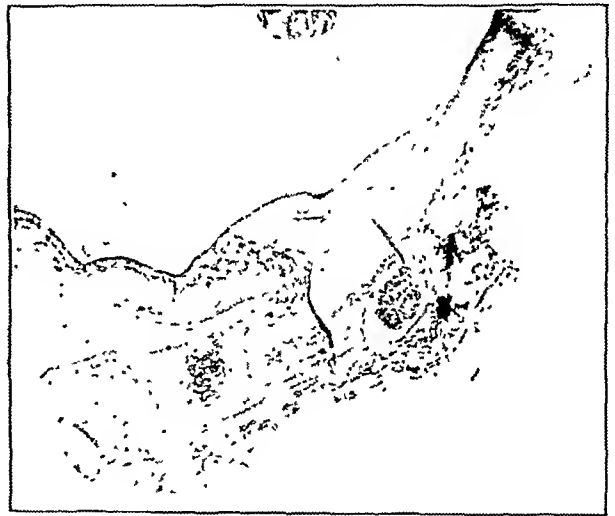


Fig. 2.—Section of specimen removed from animal 1880, showing the junction of the artery and the vein. This junction has been bridged by intima.

It was of interest to observe in these delayed anastomoses in contaminated wounds that secondary hemorrhage occurred only once following the nonsuture technic, and this in a twenty-four hour wound without the use of the sulfonamides. We have never observed an aneurysm either at the artery-vein junction or in the vein graft.

Injuries to arteries in the war wounded are likely to be extensive, and further sacrifice of the vessel is necessary in débridement. For these reasons a method of blood vessel anastomosis, to be successful and practical for war use, must be easily adaptable to the use of vein grafts, and of any length. Our method fulfils this requirement admirably and, unlike suture anastomosis, a considerable disproportion in size between the graft and artery complicates the technic and efficiency of the method not at all.⁷ The majority of the wounded

7. Mann (Mann, F. C.; Herrick, J. I.; Essex, H. E. and Blades, E. J.: *Effect on Blood Flow of Decreasing Lumen of Blood Vessels*, *Surgery* 4: 249-252 [Aug.] 1938) has shown that the lumen of an artery may be narrowed 50 per cent without affecting the volume of blood flow through the vessel. The cross section area of an artery may be cut down 90 per cent and yet the vessel deliver 70 per cent of the total volume blood flow.

soldiers will have veins intact suitable for use as grafts; e. g., cephalic vein for anastomosis of the companionate arteries; external jugular, great saphenous and femoral veins for anastomosis of other arteries. These veins may be removed quickly (twenty to thirty minutes) for use as transplants to bridge arterial defects.



Fig 3—Appearance of 2 dogs, 2110 (twelve days) and 2092 (twenty-one days) postoperatively, in which the right hind leg was amputated at the midthigh level and reimplanted after having been kept in cracked ice for twenty-four hours. Moderate edema is still present in the twelve day animal.

HETEROPLASTIC VEIN GRAFTS

By heteroplastic we mean a vein graft transplanted from one subject to another.

At the suggestion of Dr. Rudolph Matas we have thoroughly investigated the usefulness of heteroplastic vein grafts and means of preserving them. In the first place we have satisfied ourselves beyond doubt that if an anastomosed main artery can be kept patent in a soldier beyond the period of post-traumatic edema up to fourteen days the extremity will be saved. By that time collateral vessels will have developed sufficiently to avoid the occurrence of gangrene. There is an abundance of evidence, clinical⁸ and experimental,⁹ in support of this.

To gain information on whether heteroplastic veins will function adequately to prevent gangrene when used to bridge arterial defects, the following experiments were performed: Figure 3 is a photograph of 2 dogs in which the right hind leg was amputated at the midthigh level. After an interval of twenty-four hours the legs were reimplanted, the nonsuture two tube technic being used and vein grafts from a third and fourth animal to bridge the defects in the femoral artery and vein. The amputated limbs were preserved during the twenty-four hour interval in cracked ice. The dogs were given sulfathiazole 1 Gm. twice daily by mouth from the time of the first operation. The photographs were made twelve and twenty-one days respectively after reimplantation of the limbs, and there is every evidence of a good supply of arterial blood in these reimplanted legs. Correlation of these experiments with the infor-

mative studies of Brooks and Duncan on the effects of temperature on the survival of totally anemic tissue is of interest.

The survival of the legs in these 2 dogs depended solely on the function of vein segments transplanted from other dogs, and in this sense the experiments are critical. However, we have used heteroplastic vein grafts to bridge femoral artery defects in 10 additional dogs. The anastomosis functioned for twenty-seven days (average), which is well beyond the postulated fourteen days of post-traumatic edema.

Figure 4 shows a photograph of a dog's aorta in which a defect has been bridged with a segment of human saphenous vein by the nonsuture method, using two 7 mm. vitallium tubes. The photograph was taken at exploration nineteen days after the anastomosis was performed. Pulsation in the femoral arteries had remained excellent. The vein graft was patent and without evidence of beginning thrombus formation. Likewise there was no evidence in its gross appearance to indicate beginning resorption.

THE PRESERVATION OF VEIN GRAFTS

We all concede that a method of preserving veins for the purpose of functioning successfully when used subsequently as grafts to bridge blood vessel defects must meet some rigid requirements. Not only must the intima be preserved in a state of normalcy to prevent thrombus initiation at the first onrush of blood at the completion of the anastomosis but the mechanism must be intact for the immediate resumption of physiology to maintain a continued normalcy of the intima. And, finally, the method must take care of a varying degree of bacterial contamination of the veins at the time of their removal. (Veins removed according to the usual aseptic technic will reveal bacterial growth on culture in 3 out of 4 instances.)

We have found that veins quick frozen in an alcohol-solidified carbon dioxide mixture and kept in the frozen state function adequately when used as heteroplastic grafts to bridge arterial defects, and without the use of anticoagulants. As a matter of fact, the segment of human saphenous vein used to bridge a defect in the dog's aorta (fig. 4) was kept for twenty-four hours



Fig 4—Appearance of a dog's aorta nineteen days after operation in which a defect has been bridged with a segment of human saphenous vein by the nonsuture method using two 7 mm. vitallium tubes. A vein graft can be seen between the exposed funnel ends of the tubes.

8. Matas, R., in Keen, W. W.: *Surgery: Its Principles and Practice*, Philadelphia, W. B. Saunders Company, 1921, supp. vol. 7, chap. 24, pp. 737-819.

9. Reichert (The Importance of Circulatory Balance in the Survival of Replanted Limbs, *Bull. Johns Hopkins Hosp.* 49:86-93 [Aug.] 1931) of Replanted Limbs, Bull. Johns Hopkins Hosp. 49:86-93 [Aug.] 1931) resected (cutting all tissues except bone, large nerves, femoral artery and vein) and replanted by suture the soft parts of the hind legs of dogs and showed that arteries developed across the replant line on the third and fourth postoperative day. Veins and lymphatics regenerated on the fourth and fifth days. He likewise proved that the regenerated vessels were functionally adequate on the eighth postoperative day by ligation of the femoral artery and vein without the occurrence of gangrene. However, if the artery itself is ligated alone, gangrene of the leg cannot be prevented until the fourteenth day.

in the ice box and then quick frozen and preserved for three weeks before using. Veins may be kept frozen apparently for indefinite periods; e. g., on Sept. 8, 1943 defects in the right and left femoral arteries of dog 223 were bridged with segments of femoral veins from dog 2219, preserved quick frozen since June 16, 1943 (replanted).

three months). The nonsuture method of anastomosis was employed, using two 3 mm. vitallium tubes with each artery and without the use of anticoagulants. On September 22 (two weeks after the anastomoses had been performed) both vein segments were exposed and proved patent. The wounds were left open to heal by granulation. On October 16 (thirty-eight days after the anastomoses had been performed) the wounds were reexplored. The vein grafts were patent and the anastomoses functioning. There was no evidence in gross appearance of beginning resorption of the heteroplastic grafts.

Illustration 10 in figure 1 shows a convenient way of preserving a vein graft quick frozen for emergency use; e. g., to bridge a defect in the carotid artery should beginning evidence of cerebral damage supervene. Note that one end of the vein graft is already cuffed on one vitallium tube with the other brought over it to protect the intima. Care should be exercised not to exceed physiologic tension in selecting the length of the graft used to bridge a given arterial defect, and, of equal importance, redundancy should be avoided.

Repeated demonstrations have revealed that, with ready mounted vein grafts at hand, completion of an anastomosis may be routinely accomplished within fifteen minutes by the average operator.

We present 2 cases to illustrate the application of the nonsuture method of blood vessel anastomosis in the treatment of acute traumatic extremity wounds with main artery damage:

CASE 1.—History.—M. E., a boy aged 7 years, admitted to the Presbyterian Hospital July 20, 1943 in shock because of hemorrhage from a severed brachial artery, had had his left arm pushed through a glass door while at play. He received an irregular laceration across the inner aspect of the middle section of the arm. The brachial artery and the median and ulnar nerves were severed. The patient was promptly given 500 cc. of blood, 300 cc. of isotonic solution of sodium chloride and 2 Gm. of sodium sulfadiazine intravenously.

Operation.—Five hours after injury, with ether anesthesia, a pneumatic tourniquet was applied well above the wound. The skin was carefully prepared and the wound thoroughly irrigated with saline solution. The retracted ends of the severed brachial artery were freed for a distance of 5 to 6 cm. The tourniquet was released sufficiently to flush out severed vessels. Rubber shod clamps were quickly applied to the ends of the severed artery and the latter irrigated with saline solution. The cut ends of the brachial vein were transected with C Deknatel silk. As débridement proceeded, the smaller vessels were ligated with B Deknatel silk.

At this point of the operation the team was divided. This enabled one section to proceed with repair of the nerves, using arterial silk, while the other proceeded with preparation of a vein graft for bridging the arterial defect. Accordingly, the left femoral vein was isolated for a distance of 10 cm. distal to the origin of the profunda. The defect in the brachial artery was bridged by means of the segment of femoral vein mounted on two vitallium tubes 2 mm. in diameter. Just before removal of the rubber shod clamps 15 mg. of heparin (1.5 cc. of liquaemin) was injected into the artery just proximal to the anastomosis.

A pink color of the boy's hand resulted immediately after re-establishment of blood flow and only a few minutes elapsed before the left hand was as warm as the right. The muscles, fascia and skin were approximated with fine silk. The patient received 300 cc. of blood during the operation and left the table in excellent condition. The arm was placed in a plaster splint with the hand in volar flexion.

Postoperative Course.—The wound healed by first intention. The patient was discharged on the eleventh postoperative day

in a constant tension splint to permit exercise of unopposed extensor muscles, but protecting the paralyzed flexor muscles of the forearm against overstretching. Sulfadiazine therapy was continued through the fifth postoperative day. We cannot say that postoperative heparinization was adequate (its administration by continuous intravenous drip was discontinued after sixty hours) because the clotting time (capillary method) varied

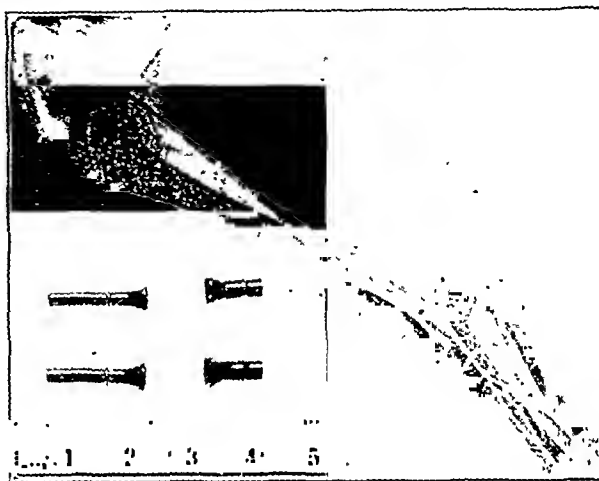


Fig. 5.—Arteriogram of the anastomosed brachial artery in case 1 one month after operation. Whereas the funneled ends of the vitallium tubes are close together, a column of diodrast may be noted passing through the intervening vein graft. Compare the long tubes as used in this case with the shorter tubes of recent design shown in the inset.

from three to six minutes. Daily observations of the left radial pulse revealed it unchanged in volume.

Follow-Up.—One month later the patient was receiving physical therapy. The left radial pulse remained good. An arteriogram (fig. 5) confirmed the patency of the anastomosis. However, thrombosis of the anastomosis took place immediately following the injection of diodrast.

After five months chronaxia studies revealed innervation of the forearm muscles supplied by the median nerve.

After fourteen months complete sensory and motor recovery of the median and ulnar nerves had occurred. However, there was yet some inability to extend the fingers completely as the result of weakness of the interosseus muscles, though chronaxia studies revealed complete regeneration.

After seventeen months function had completely returned.

CASE 2.—History.—R. J., a colored boy aged 15 years, entered the Presbyterian Hospital July 7, 1944 with a severe laceration of his left arm. He incurred the injury falling through a plate glass cellar window. A tourniquet was promptly applied. After his arrival at the hospital, some hours later, a pneumatic tourniquet was applied, and deflated at one-half hour intervals. Family and past history was noncontributory. Physical examination revealed temperature 101 F., pulse 132, blood pressure 160/80. The boy was well developed and was apprehensive but not in shock. Examination of the left arm revealed a transverse laceration starting in the midbiceps region, directed obliquely downward, dividing all soft parts to the bone and entering the elbow joints anteriorly. The laceration involved approximately two thirds of the circumference of the arm. The radial and median nerves were severed, as were the brachial artery and accompanying veins. As a result of muscle retraction the wound gaped widely. The forearm and hand remained cold, pale and pulseless following release of the tourniquet (fig. 6A and B).

Operation and Result.—This consisted of irrigation and débridement of the wound, with suture of the radial and median nerves. The brachial artery defect was bridged with a segment of saphenous vein by the nonsuture technic, with a 4 mm. vitallium tube on each end. An excellent radial pulse was felt on releasing the brachial artery to blood flow. The postopera-

tive course was stormy, and great swelling of the entire arm occurred but subsided after ten days. The wound healed by first intention and an arteriogram carried out on the thirty-fourth postoperative day confirmed the patency of the anastomosis (fig. 7).

Follow-Up.—After four months the radial pulse remained excellent. Chronaxia studies revealed no innervation of the

shock and ischemic muscle changes. But it is of extreme interest that the latter was found only in the muscles supplied by the nerves that had been severed.

In the handling of wounded extremities with main artery damage the following routine is recommended:

1. Immediate control of hemorrhage: If a tourniquet is necessary, as it probably will be, it should be broad and well padded. A blood pressure cuff is ideal because of the ease with which it can be inflated and released at half hour intervals.

2 Treatment for shock: Whole blood transfusions are ideal in these cases because of promoting the maximum oxygen carrying capacity of the circulating blood.

3. Control of pain and vasospasm: Papaverine hydrochloride 1 grain (0.06 Gm.) given intravenously and followed at two hour intervals with $\frac{1}{2}$ grain (0.03 Gm.) hypodermically is the best single drug for this dual purpose.

4. Chemotherapy: Penicillin is undoubtedly the preferable agent in these cases. From 30,000 to 50,000 units should be given intramuscularly, to be followed by injections of 20,000 to 25,000 units at three hour intervals. Second best is the sulfonamides, but a high blood level should be attained as rapidly as possible. The patient should, of course, be protected against tetanus.

5. Preservation of a lowered temperature in the wounded extremity: It is now recognized that the maintenance of a lowered temperature reduces the metabolic rate in anemic tissues and is an important factor

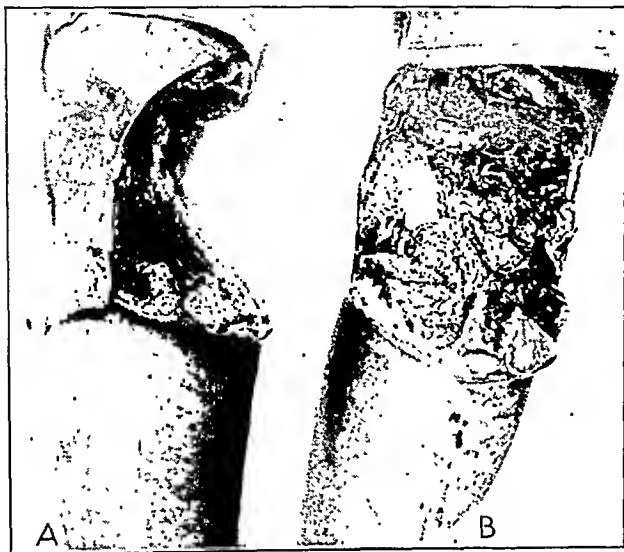


Fig. 6.—Lateral (A) and anterior (B) views of wound in case 2.

forearm muscles as yet. Muscles supplied by the tourniquet damaged ulnar responded to direct stimulation, whereas there was no response from those supplied by the sutured radial and median nerves. Furthermore, the latter muscles were more wasted and fibrotic.

At seven months beginning nerve regeneration was taking place below the elbow. The radial pulses remained equal.

The similarity of these wounds to war wounds was as follows:

1. Damage to collateral vessels was extensive because of the location and scope of the wounds.

2. They were contaminated wounds with delayed treatment: Time elapsed from injury to restoration of blood flow in case 1 was eight hours, in case 2 eight hours.

It seemed highly probable that the extensive destruction of collateral vessels precluded saving the arm without performing an anastomosis in case 1, and certainly gangrene was avoided by restoration of blood flow in case 2. Under the favorable egis of débridement and sulfadiazine in case 1 and, in addition, penicillin in case 2, primary healing followed primary closure of the wounds.

It is of interest to note that the great saphenous vein was too small to use as a graft in the brachial artery of the 7 year old boy (case 1), but the diameter was exactly right in the 14 year old boy (case 2).

The vitallium tubes used in case 1 were smaller than any ever used by us in anastomosing vessels in experimental animals; furthermore, the administration of heparin in this case was inadequate both as to quantity and as to duration. In spite of these handicaps, a radial pulse of constant volume was maintained in the arm until thrombosis of the anastomosis suddenly occurred following the injection of 35 per cent diodrast for arteriography one month after operation.

Case 2 well illustrates the viciousness of prolonged tourniqueting: nerve paralysis (ulnar), tourniquet



Fig. 7.—Arteriogram in case 2 thirty-four days after operation. The patent saphenous vein graft is about the same size as the anastomosed brachial artery. The slight bulge of the upper end of the graft marks a valve site in the vein graft.

in delaying the onset of irreversible changes. It is usually not difficult to attain the right degree of chilling. It is well to remember that a totally anemic extremity will quickly assume the temperature of the surrounding air. If the latter is below freezing, of course the limb must be covered sufficiently. If, on the other hand,

the surrounding air is above 50 or 60 F. the limb may be chilled by swathing it in moist¹⁰ bandages and directing on it a current of air during transport or by an electric fan. And, finally, ice bags may be used, but guardedly, say one half hour on and one quarter hour off.

6. Position of limb: When at rest or in transport, the limb should be placed at rest in a position 4 to 6 inches below the heart level. This elevates venous pressure in the extremity just enough to keep what little blood that may arrive via collaterals sufficiently long for complete deoxygenization.

When the patient arrives at the installation where it is feasible to replace the tourniquet by surgical hemostasis, it is suggested that the operator should explore the wound and first secure the proximal stump of the severed main artery by ligature, securing in due course bleeding vessels as they are encountered. The distal end of the severed main artery should be washed free of clot with saline solution and the briskness of bleeding, if any, noted. Finally, 20 to 30 cc. of saline solution to which has been added 10 mg. of heparin (1 cc. of liquaemin) and 50,000 units of penicillin should be injected into the distal artery stump followed by its ligation. At this point of the procedure, if conditions do not favor proceeding with débridement or the restoration of blood flow by anastomosis (should the latter seem indicated), hemostasis may be completed and gauze placed loosely in the wound.

Penicillin 50,000 units, if not previously administered, should be given intramuscularly and continued thereafter, at three hour intervals, in adequate dosages. An adequate dose (150-200 mg.) of heparin in Pitkin's menstruum¹¹ should be deposited subcutaneously in the lateral aspect of the thigh. Papaverine hydrochloride should be continued subcutaneously, in half grain doses at two hour intervals until the patient reaches the installation with facilities necessary for definitive care, e. g., sympathetic nerve block, débridement and anastomosis.

Irrigation of the distal vascular tree with saline solution containing penicillin and heparin washes out contaminated thrombi from damaged veins, places penicillin in adequate concentration in those tissues in which, because of damage to blood supply, resistance to infection is lowest. Though some of the heparin and penicillin is washed out into the wound, the heparin which remains in those parts of the vascular tree where stasis exists prevents thrombosis until complete systemic heparinization supervenes, a matter of two hours following the subcutaneous deposit of heparin in Pitkin's menstruum. Then, for a period of forty-eight hours, it can be counted on that each collateral vessel anatomically intact will remain patent and the distal vascular tree free of thrombus. This insures, on the one hand, success with subsequent sympathetic nerve block in cases in which there are an adequate number of collaterals functionally intact and for others a patent vascular tree ready for the reception of a restored pulsating, normal volume blood flow by anastomosis.

There is excellent evidence, both experimental and clinical, in support of the opinion that if the foregoing measures are carried out, with careful attention to detail, the expectancy of salvage following restoration of blood flow by anastomosis may extend from twenty-four to forty-eight or more hours after injury—time to cover a lot of distance in this mobile era.

(To be continued)

ABDOMINAL PAIN IN CHILDREN

JOSEPH BRENNEMANN, M.D.

READING, IT.

There is probably no more interesting, uncertain or hazardous clinical domain in childhood than acute conditions in the abdomen and pain is the presenting symptom, the warning signal, that something has gone wrong and that it may be serious. That it is not usually so has in itself an element of danger. The very fact that the incidence of conditions that are not serious is much higher than that of those that are may lead to a lack of wariness that may be fateful. The differentiation cannot be made safely on the telephone. The difficulty in diagnosis is not due to the fact that the infant cannot talk and the older child may not be able to give an intelligent account of his symptoms. The pediatrician is as much at home with the youngest child as he is with the oldest. The morbid anatomy of the child is distinctive and relatively limited; his signs and symptoms are true and dependable and are not swayed by aberrant emotions as they are more often in the adult.

Pain in the sense here used naturally includes tenderness, which is usually of greater diagnostic value in this connection than is spontaneous pain. For this and other reasons, palpation is the most revealing procedure in abdominal diagnosis.

The majority of the more serious abdominal conditions heralded and accompanied by pain fall into two main categories: those due to obstruction and those due to infection. Each of these presents its own characteristic signs and symptoms that vary only with the degree rather than the nature of the underlying condition.

When there is obstruction to any hollow viscus with a muscular propulsive mechanism there is intermittent pain, which may be very slight or very intense depending on the degree and suddenness of the obstruction. If it is sudden and complete, the pain is agonizing, especially at the start, and there may be shock. This is known as colic no matter what the underlying cause. There is very little tenderness. Pressure, indeed, is often a source of relief and is not infrequently self applied. If the obstruction is partial and gradual in onset, the pain varies with the degree of obstruction. It is always intermittent, it may be almost negligible, it may be severe. Hypertrophy, hyperperistalsis and distention, finally atony if too long continued, supervene proximal to the point of closure, and atrophy and contraction distal to it.

In conditions due to infection, the pain is more constant and uniform unless there is concurrent obstruction. Intermittent periods of greater pain will then manifest themselves. Tenderness is always present over the affected area and is more pronounced than unelicited pain.

THE OBSTRUCTIONS

In the child, the obstructions occur predominantly in the intestinal tract, and the pains and other symptoms and signs conform to what has just been said. Among the congenital intestinal obstructions are those due to atresia and stenosis, bands, eventration, fetal peritonitis, malrotation of the midgut and meconium

10. We have found that wetting the gauze with alcohol at half hour intervals is a simple method of chilling a limb.

11. Procured of Roche-Organon, Inc., Nutley, N. J.

Dr. Brennemann died July 2, 1944.
Read in a symposium on "Abdominal Pain in Children" before the Section on Pediatrics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 13, 1944.

ileus, in which there is an almost irremovable rubbery mass of meconium throughout the intestinal tract due to a pancreatic deficiency.

PYLORIC STENOSIS

In pyloric stenosis there is a gradual and partial obstruction. There is therefore only slight pain, usually not enough to make the infant cry. There is only an obvious discomfort, as shown by the wrinkled brow, the look of apprehension and the stopping of nursing as each new episode occurs coincidental with the appearance of maximal peristaltic gastric waves and the approach of projectile vomiting.

THE COLIC OF INFANCY

The colic of infancy is in a class by itself. The very name in common usage everywhere suggests a pathogenesis identical in nature with that of other colics. The pain is agonizing; it is definitely intermittent. It comes on rather suddenly and usually ends as abruptly. Pressure is grateful as in other colics, as every mother knows. For some unexplained reason it tends to occur at about the same time each day, usually the late afternoon or early evening. The frequency with which it occurs only during the first few months of life has led to the term "three months colic" among the public, who often look on it, in legal phraseology, as an "act of God," something that cannot be avoided and must be accepted. It has been attributed to enterospasm, imbalance of the autonomic nervous system, a hypertonic or neuropathic constitution, hunger, overfeeding and even a "fatigue toxin" in the mother's milk. Since one cannot accept all of these explanations one need not accept any of them. Colic is a human condition; it does not occur among the young of our barnyard animals. The baby comes into the world far more underdone than these and it is probable that the intestinal tract shares in that handicap. Colic is as frequent in the breast fed as in the artificially fed infant; probably more so. With its content of around 7 per cent of lactose and nearly 4 per cent of fat, human milk has a high percentage of fermentable food elements. The distention by gas from this source may itself be a cause of severe pain and possibly of mechanical obstruction. It seems not unlikely too that acute obstruction may result from kinking or bending on itself of the overdistended intestine in the cramped space in which it lies. The relief that often comes from an enema or a spontaneous burst of flatus lends confirmation to an etiology of this nature. I have never encountered colic in an infant with pyloric stenosis where hunger must be at a maximum. Overfeeding may enter into the picture. The other explanations seem hazy and are not fully established therapeutically.

Babies often cry during, more often immediately after, nursing, obviously because of the combined pressure of food, gas and swallowed air and the inability of the stomach to push the milk through the pylorus fast enough. This is sometimes called by infant nurses the "up" as compared with the "down" variety of colic just discussed. The pain is often quite intense. It is relieved at once by holding the baby in the erect position and making pressure on his stomach, or more often by holding him snugly against the shoulder and patting his back. This is commonly referred to as "patting up the bubbles" or, more onomatopoeically, as "burping."

ACUTE INTESTINAL OBSTRUCTION

Intussusception is the most frequently occurring of acute intestinal obstruction. It is relatively rare; the first year of life and especially so after the second. The onset is dramatic. Awake or asleep the baby suddenly cries out with a pain that is obviously extreme. He screams, claws and clambers up on his motor twists and squirms, and nothing gives any relief almost as suddenly, there is a lull with absence of pain only to be followed by a similar painful episode. The sudden onset is of great diagnostic value. As in almost no other condition the mother usually states the exact hour at which the pain began. In the course of several hours the pains become less severe, as a rule not enough to cause the child to cry out as before. With the recurrence he merely squirms, throws himself to one side, doubles up, whimpers, moans or sighs. His face usually becomes so distinctive that it too is of diagnostic value. He appears calm, too calm, paying little attention to his surroundings and yet seems preoccupied and apprehensive. Only twice can I recall having seen a child with an intussusception smile. This calm follows the storm, probably due to shock, is apt to mislead the mother, who naturally measures her child's illness by the degree of pain, as well as the doctor who has not seen or properly evaluated the onset. The blood in the stool, often only in a second one, brings about renewed interest. The sausage shaped tumor that is pathognomonic in this clinical setting, that may be found anywhere between the ileocecal valve and the rectum, that can nearly always be made out by palpation without an anesthetic, if one has patience, gentleness and a warm hand, is only slightly tender.

A rectal examination is always interesting for several reasons and may clinch the diagnosis. Whereas the normal infant nearly always screams with pain, the baby with an intussusception will, as a rule, pay no attention to the painful procedure. Again, the finger seems to fall into an empty cavity and as it is withdrawn it is followed in the great majority of cases by a small, silent spurt of a turbid currant jelly-like mixture of blood and mucus that too is pathognomonic of intussusception in the proper clinical setting. The examination may further be rewarded, though rarely, by finding the cervix-like mass with its central dimple.

If in any case of intussusception there is pure blood in any considerable quantity one must suspect that an ulcerated Meckel's diverticulum is involved in the process. Finally it must be borne in mind that very exceptionally there may be but little pain at any time or a great deal throughout the whole course of the illness.

Sudden and complete intestinal obstruction from any cause such as strangulated hernia, volvulus, paralytic ileus, congenital or acquired bands or Meckel's diverticulum may present much the same pain and other signs and symptoms that occur with intussusception except that there is no bleeding from the rectum and no sausage shaped tumor.

CHRONIC INTESTINAL OBSTRUCTION

The pain that occurs with chronic intestinal obstruction due to congenital bands or narrowing, to tumors, to postoperative adhesions and contractions and other like conditions may be negligible; it may be fairly severe, depending on the nature, the rate of development and the degree of obstruction. It is always intermittent. It occurs with each new contraction of the intestine.

proximal to the point of obstruction. It is in these chronic conditions—that intestinal patterning, exaggerated peristaltic movements and abdominal distention are the outstanding features, especially if the colon is involved. The diagnosis must be based on the whole clinical picture.

CONGENITAL ANORECTAL STRICTURE

Congenital anorectal stricture is not a rare condition; it presents a striking clinical picture and yet it is still commonly not recognized. The obstruction is due to an incomplete fusion of the descending mesenteron and the ascending proctodeum during fetal life with a resulting iris diaphragm, or sickle shaped, protrusion from the rectal wall into the lumen of the intestine at a point rarely more than a centimeter above the sphincter ani. If the obstruction is only moderate there will be relatively slight pain; there may be little or a great deal of distention and patterning if the condition is not relieved. The stricture, on the other hand, may be so tight that the smallest little finger cannot be inserted at one sitting without undue force and only a narrow ribbon-like, or slate pencil sized, stool can be passed with great effort. Even meconium and gas may not be passed for days. The abdomen may assume truly batrachian proportions and be covered with engorged veins. Under these more acute conditions the infant may scream with each new painful contraction. That the disease is not one of great rarity is evidenced by the fact that I have seen at least 25 cases. In every instance the child was completely cured by digital dilation, sometimes by one insertion, more often by inserting a larger finger each time over a period of days. In only 1 infant, though the stricture was fully dilated, abdominal distention persisted as the result of some cause that was not even cleared up by laparotomy. The surgeon is, naturally, rarely privileged to see this condition.

Similar signs and symptoms may be produced by redundant valvelike folds, or plications, of the mucosa higher up in the rectum. A boy about 6 years of age with a huge megacolon could be completely deflated with a hissing sound each time a proctoscope was easily passed just 4 inches.

OBSTRUCTION OTHER THAN INTESTINAL

Renal and gallstone colic I have never encountered in a child. Ureteral obstruction due to congenital narrowing of the ureter at the ureterovesical junction, or an aberrant artery crossing the ureter near the renal end, or a kinking of the ureter causes hypertrophy and dilatation of the ureter and kidney proximal to the obstruction, but this rarely leads to much pain; sharp pain may, however, occur with acute obstructions due to kinking. An acute painful obstruction due to plugging of a ureter with pus in so-called pyelitis is, in my experience, either extremely rare or else hard to recognize. Vesical neck obstruction leads to hypertrophy and dilatation of the bladder, ureters and kidneys and carries with it the intermittent pain and discomfort of an obviously chronically distended bladder.

Children will sometimes permit the bladder to become distended to a painful degree without any evidence of either a local or a central lesion. A little encouragement, a stern admonition, some running water, letting a bedridden girl sit up and a boy stand, will nearly always obviate the necessity of catheterization. A fairly

common condition is the very painful, acute distention of the bladder due to the pain on urination that goes with the ulcerated meatus that so often accompanies the ammoniacal night diaper of infancy. Sometimes the opening is nearly closed by a crust. Applying a drop of a cocaine solution to the meatus brings prompt relief to both the local pain and the painful distention of the bladder.

THE INFECTION APPENDICITIS

Appendicitis is the *bête noire* in abdominal diagnosis. Because an early and immediate diagnosis is always important and may be vital, every abdominal pain, every "stomach ache" calls for the exclusion or establishment of the diagnosis of that disease. The warning signal of abdominal pain can never be dismissed casually. While the diagnosis, based on the mode of onset with characteristic pain, tenderness and vomiting, the low fever and the usually significant leukocytosis, is often, probably usually, easy, it is by no means always so. After more than forty years of extensive and intensive experience and an interest in the subject second to none other, I can truthfully say that I still approached the acutely painful abdomen in a child with more apprehension and a greater feeling of uncertainty than any other domain in childhood. Even sadder is the fact that all this interest and experience did not make me feel that I had a very appreciable edge on my residents, whose experience was so much more limited. I think I might add, after due hesitation, that even the excellent surgeons with whom I was associated did not have a significantly higher batting average than did the rest of us. The surgeon has an advantage over us in that his experience is largely restricted to those cases that probably are, or are thought to be, appendicitis. He is at a disadvantage in that he does not see the far greater number of cases of abdominal pain that might be due to appendicitis but are not that the pediatrician and the general practitioner are called on to differentiate. These include nearly all other painful abdominal conditions, except those already discussed, and can therefore be taken up in the differential diagnosis of appendicitis.

The appendix is an insignificant little organ of serious import only because of its location in the peritoneal cavity. When inflamed it very rarely causes intense pain or more than a few degrees of fever. Only two or three times have I seen a child scream with pain. He may even then have had a low threshold with reference to pain. As in the adult, the pain commonly starts in the region of the umbilicus and after a variable period it shifts to some other part of the abdomen, usually to the right lower quadrant. The tenderness is always at the point of maximal involvement and is of far greater diagnostic value than the spontaneous pain. Early point tenderness is the single most important diagnostic sign. Later it becomes more diffuse. This point is most frequently somewhere around McBurney's point. It may, however, be higher or toward or in the right flank if the appendix is retrocecal or near Poupart's ligament on the right side or even to the left of the midline. We had at one time 2 children in whom the tenderness was definitely on the left side. One was a case of situs inversus; in the other child the appendix stretched across the midline and the tip was the most tender part. The child naturally protects himself voluntarily by tensing his abdominal muscles when he is palpated. Involun-

tary, boardlike rigidity occurs when peritonitis has set in. Rigidity is not an essential factor in the diagnosis of an uncomplicated appendicitis. Rebound tenderness is interesting but merely indicates that there is an intra-abdominal infection. It has never seemed to me that the very unpleasant, even painful, rectal examination often adds anything to the diagnosis in a child except when a pelvic abscess is suspected either before, but especially after, operation.

DIFFERENTIAL DIAGNOSIS AND OTHER CAUSES OF ABDOMINAL PAIN

The pain of a diaphragmatic pleurisy of a right lower lobe pneumonia may be referred to the right upper quadrant of the abdomen and simulate that of appendicitis. The pain is usually greater than the tenderness and higher in the abdomen. The clinical pictures in the two conditions, however, differ widely. If one is in doubt an x-ray film will nearly always settle the matter.

Carnet published a series of papers dealing with "intercostal neuralgia" as a source of error in the differential diagnosis of appendicitis. He maintained that if the abdominal wall was tensed by straining or by elevating the legs in the dorsal position the tenderness would disappear in appendicitis and remain in "intercostal neuralgia." I was not impressed until he showed me several cases, all, however, in adults. It is a difficult sign to elicit in children.

A beginning peritonitis due to perforation of an ulcer in Meckel's diverticulum can hardly be differentiated from appendicitis unless it is accompanied by a hemorrhage from the rectum.

Torsion of a right sided ovarian pedicle gives much the same type of pain and other symptoms as those of an inflamed appendix. A very high leukocyte count or the early finding of a small, hard, fairly tender mass high on the right side on rectal examination should make one suspicious of a twisted pedicle. The first premenstrual pain of an adolescent girl, even the intermenstrual mittelschmerz of a ruptured ovarian follicle on the right side may have to be considered. The abdominal pain of Henoch's purpura may lead to an error in diagnosis if the petechial hemorrhages have not as yet appeared in the skin, a possible occurrence. This is true also of the pain and tenderness of a right sided oophoritis or of an acute pancreatitis occurring with mumps, especially if the involvement of the salivary glands has not yet occurred or has not been recognized. A diverticulitis other than that of Meckel's diverticulum, which can hardly be differentiated from appendicitis, I have never recognized in a child. The pain and tenderness of subdiaphragmatic abscess, usually on the right side following appendicitis in children, develops slowly and is rarely severe—it may be nearly absent. It may be referred to the shoulder, more often to the right upper quadrant of the abdomen, due to diaphragmatic pleurisy, which is always present together with a pleural exudate. The x-ray may also show air in the abscess below the diaphragm or succussion may be elicited. In perinephric abscess there is dull pain and deep tenderness of gradual onset in the flank. The pain and tenderness of the onset of dysentery may be confusing if the characteristic diarrhea and tenesmus have not set in. The discomfort of a simple gastroenteritis is usually not localized and should not enter into the picture as often it does.

PARENTERAL INFECTIONS

A frequent cause of confusion in the differential diagnosis lies in the abdominal pains that occur with parenteral infections, most often with upper respiratory tract infections, possibly only because these are more frequent than all other infections combined. They occur not infrequently with acute rheumatic fever. One type of pain occurs early, is commonly restricted to the umbilicus, is sharp, intermittent, of variable intensity and suggests a referred pain from some undetermined source. There is little or no tenderness. Another pain occurs at any time during, or throughout, the parenteral infection, is more diffuse, of a duller character and there is more tenderness than spontaneous pain. This pain is rather obviously due to mesenteric lymphadenitis. This has been confirmed by both operation and necropsy. If the pain and tenderness are widespread or on both sides, the case is probably not one of appendicitis. Whether these two manifestations of pain have a common origin is not known. One can only speculate too as to whether this more widespread type of lymphadenitis has the same etiology as the mysterious, apparently more regional lymphatic involvement not so infrequently encountered at operation instead of a suspected appendicitis. I rather doubt it myself. It has been claimed that the differential diagnosis between appendicitis and lymphadenitis can readily be made by turning the patient for a short time on the left side and then determining the site of tenderness. If it remains on the right side it is said to be due to appendicitis; if it has shifted to the left, to lymphadenitis. I have not been able to confirm this sign in children, nor do I know how to differentiate the two conditions. It should be emphasized, although parenthetically, that the presence of an upper respiratory tract infection must never keep one from treating as appendicitis a condition that looks like appendicitis, since there is considerable evidence that more than half of all cases of appendicitis are causally related to throat infections.

PERITONITIS

In secondary peritonitis, usually due to appendicitis, there may be a lull in pain following rupture of the appendix, but this is soon followed by greater pain, exquisite tenderness and involuntary boardlike rigidity over the affected area. These are often more widespread than the local lesion would seem to indicate. It is then often hard to determine whether one has to deal with a spreading secondary peritonitis or a so-called primary peritonitis if one sees the child at an advanced stage of the disease unless there is a clearcut history of the pain and tenderness having started in the right lower quadrant or unless there is still more tenderness in that region than elsewhere. If there is a walled off local abscess, the pain and tenderness lessen gradually at first and after a time much more rapidly. Similar signs and symptoms follow the rupture of an intestine, the perforation of an ulcer or the suppuration and rupture of a lymphatic gland, fortunately a very rare occurrence.

In primary peritonitis the child appears from the start much sicker than with an uncomplicated appendicitis. Severe pain, mirrored in the drawn and tortured face, and exquisite tenderness and boardlike rigidity, appear rapidly over the whole abdomen with no definite localized starting point. It is, however, sometimes difficult to diagnose in a young infant, and now with the

use of the Wangenstein technic and the sulfonamides, which seem clearly indicated if a primary peritonitis is suspected, we are sometimes confronted with the anomalous situation of probably having cured a very serious illness without knowing whether it really existed. The pain, tenderness and other signs and symptoms are the same whether the peritonitis is due to a pneumococcus or to a hemolytic streptococcus, which seem about equally frequent as causal agents. Primary peritonitis is often preceded or accompanied by diarrhea, a very rare occurrence with appendicitis or secondary peritonitis.

Tuberculous peritonitis usually causes little more than a dull pain or discomfort unless there is obstruction due to narrowing of an intestine or extreme distention from fluid.

In conclusion, I can only say that the majority of abdominal pains encountered in private practice, which gives a truer picture of actual incidence than is found in hospital practice, have, in my experience, been of unknown nature and unknown etiology.

ABSTRACT OF DISCUSSION

DR. M. G. PETERMAN, Milwaukee: Abdominal pain is one of the most common symptoms in childhood. Children refer many of their complaints vaguely to the abdomen. Fortunately they vomit easily, especially after dietary excesses. The pain and vomiting must not be taken too seriously, since they usually tend to subside spontaneously if the children are left alone and allowed to rest. The greatest danger to the patient is the surgically minded colleague who focuses attention on the appendix. Acute appendicitis is a rare disease in childhood, but, unfortunately, appendectomy is paradoxically a common operation. I am amazed at the discrepancy between the number of abdominal surgical scars I see daily and the few cases of genuine acute appendicitis. I am just as much astounded at the rarity of leukocyte and differential counts and rectal examinations on children before operation. If a reasonable doubt exists as to the diagnosis of acute appendicitis, the appendix must be removed. However, that doubt cannot be reasonable until a leukocyte and differential count, a urinalysis and a rectal examination have been made. Surely there is always time for these harmless procedures before submitting a child to an abdominal exploration. The incidence of cases diagnosed as acute appendicitis at Milwaukee Children's Hospital in the last ten years was only 2 per cent of the total admissions. Many children with recurring abdominal pain are brought in to the office for diagnosis after appendectomy has failed to bring relief. The child with recurring abdominal pain demands a careful examination and a consideration of the possibility of gastrointestinal allergy and of subacute rheumatic fever. These two conditions often explain the obscure pains which may be associated with low fever and slight, if any, leukocytosis. Allergy causes pain by producing spasm of the intestinal tract and rheumatic fever, by infection. Much of the colic in infants is due to gastrointestinal allergy to foods, particularly when these are introduced too early. It is a common practice today to introduce new foods long before there is any need for them and long before the infant gastrointestinal tract is prepared for their digestion. Commercial advertising has exerted a pernicious influence on infant feeding in modern practice. Another cause of chronic or recurring abdominal pain emphasized long ago by Dr. Brennemann is that due to the infection or enlargement of retroperitoneal glands. In such possible cases tuberculin must be given and sedimentation rate tests made for diagnosis. Chronic constipation or incomplete evacuation of the rectum is a common cause of abdominal pain and can be easily remedied without surgery. I agree with Dr. Brennemann that the majority of abdominal pains in children are of unknown etiology, but I am sure that most of these disappear under conservative management.

DR. JOSEPH GOLOMB, New York: In differentiating diaphragmatic pleurisy or pneumonia from appendicitis Dr. Alexander Nicoll of Fordham Hospital has the apt saying "Too sick, too soon." This means too sick, too soon to be appendicitis. In differentiating a surgical from a nonsurgical condition of the abdomen Dr. Henry Roth of Lebanon Hospital has a helpful hint: "A child who is conscious and not forcibly held, who on deep abdominal palpation makes no attempt to remove your hand probably does not have a surgical condition of the abdomen. The converse is not true." Dr. Brennemann has described the severe pain lasting for months caused by a membrane at the anus. This is important but not common, as I have seen only 3 cases in over a quarter of a century. However, there is a common entity, frequently unrecognized, caused by spasm or hypertrophy at the anus. Here there is a history of colicky pain, worse after each feeding, with considerable straining at stool, followed by a soft, normal bowel evacuation. This condition is usually relieved by a single insertion of the small finger, although sometimes repetition is needed. I feel that this entity as a cause of abdominal pain should always be kept in mind. A radical suggestion to prevent anal disturbances would be to have the obstetrician do a rectal examination of every child before it leaves the delivery room.

DR. JOSEPH BRENNEMANN, Reading, Vt.: I yield to no one in the matter of conservatism, in the matter of using every possible means of trying to decide whether a child has appendicitis or whether it has not. I think there is no question but that there are more children operated on for appendicitis than those who really have appendicitis; nevertheless I think that it is relatively rare that one would be justified in assuming that doctors are operating on appendicitis for the sake of the operation. I have not made rectal examinations routinely. A rectal examination is an extremely unpleasant experience. I can recall only about 1 case in which I missed for a short time a small abscess above Poupart's ligament that I could find after a resident called my attention to the fact that there was a little mass on the rectum. Following operation, when there is a possible paralytic ileus a rectal examination is indicated. I do not quite appreciate why a colic is due to allergy and is present between 5 and 6 o'clock in the afternoon or between 9 and 10 in the evening almost every time instead of at the same time the bottle is given or at some other time of day. I am not unconscious of the fact that constipation makes an abdominal pain. I was guilty at one time, when we had more diarrheas than we have now, of using the expression "Thank God for constipation in a baby," because constipation we can always relieve. Diarrhea was a thing that used to bother us a lot. Why sticking a finger into a child's rectum should cure colic or should cure a condition of this sort is a little hard for me to comprehend. I have never seen it. Dr. Golomb spoke of a membrane. That is a different thing. One can put a finger, as I have done in these cases, into the rectum every day and the muscle will be just as tight the second and third and fourth day as before; but if one slips a finger into one of those that has an anal sphincter with difficulty today one can do it easily tomorrow.

Medical Facilities in the Philippine Islands.—At the end of 1938 there were about 160 hospitals with a total capacity of approximately 0.76 bed per thousand of population (United States of America, 9.7 beds per thousand of population). This included hospitals directly under the jurisdiction of the commonwealth government, general hospitals, university hospitals, leprosariums, penal hospitals, mission hospitals, private hospitals and maternity hospitals. In general, hospitals were fairly well equipped and were able to offer a variety of services. Public health laboratories were maintained in the provinces, and their facilities were available free of charge. In addition there was a large number of public dispensaries and special treatment stations. In every instance the hospitals and clinics were utilized fully, and increased capacity was a constant need. The outstanding deficiency was a notable lack of isolation facilities for patients with communicable diseases.—Simmons, James S.: *Global Epidemiology*, Philadelphia, J. P. Lippincott Company, 1944.

ABDOMINAL PAIN IN CHILDREN DUE TO ALLERGY

BRET RATNER, M.D.

NEW YORK

Abdominal pain in children at times presents difficulty in diagnosis. Every year children with obscure abdominal pain are admitted to our hospital wards and subjected to many tests to rule out such conditions as tuberculous abdominal lymph nodes, various anatomic defects of the gastrointestinal tract, recurrent appendicitis, pyelitis, kidney stones and so on. Very definite causes may be found as a result of such investigations, but on occasion the child is sent home with his condition undiagnosed. Our thesis is that in some of these children abdominal pain may be due to food allergy. The many differentiating points of interpretation of abdominal pain found in intussusception, appendicitis, dysentery, peritonitis, mesenteric lymphadenopathy, pneumonia, rheumatic fever and simple gastrointestinal disturbances will not be considered in this communication. The discussion herein is solely concerned with the evaluation of abdominal pain due to food allergy.¹

PATHOGENESIS

I have observed many guinea pigs with pronounced spasm of the intestine after an acute anaphylactic reaction when fed milk to which they were sensitized. The outstanding features of anaphylaxis in the calf noted by Code and Hester² were dyspnea followed by progressive distention of the abdomen. The abdominal skin became extremely taut. The ballooned abdomen gave a pronounced tympanitic note on percussion. In discussing the mechanism of cattle anaphylaxis recently I³ made the following observation: "The marked distention of the calf's stomach is particularly interesting inasmuch as it is a striking example of excessive preponderance of smooth muscle in a particular organ which becomes the site of the most intense anaphylactic reaction. The distention must be attributed to spasm of the pylorus and cardia. Stomach contractility finally ceases when the distention becomes excessive."

The allergic phenomenon results from a disturbed physiology, mainly of smooth muscle. It is not strange therefore that the gastrointestinal tract, which is so rich in smooth muscle, should at times be subject to allergic reactions involving its structure. Besides the spasm of smooth muscle, it is conceded that wheal formation may account for some of the pathologic disturbance, and involvement of the vessels of the intestinal wall may explain some of the more serious consequences which not only make the allergic reaction resemble acute appendicitis or intussusception in all essentials but may actually produce these pathologic conditions. Thus the primary reaction may be a spasm or wheal formation, which is followed by edema and vascular congestion of the submucosa and serosa. This in turn paves the way

for bacterial invasion and its typical suppurative picture leading to gangrene or perforation. The allergic reaction per se is reversible and the organ returns to normal without residual change. However, if the stage of necrosis is reached the condition then becomes irreversible and the appendical involvement or intussusception must be regarded as pathologic and treated surgically.

To orient ourselves with respect to the allergic phenomenon it should be recalled that: 1. When a protein food is ingested not all of the native albumin fraction is readily broken down into its degradation products by the intestinal enzymes and as a consequence some of it may pass unchanged into the blood stream as a native protein. 2. Sensitization may be acquired in various ways and may affect any part of the digestive tract from the mouth to the rectum. 3. Before an allergic reaction can occur, tissues harboring the allergic antibodies must come in direct contact with native protein; i. e., the tissue must previously have been sensitized. 4. Not only may the surface of the intestinal wall be affected, but, as the protein traverses the wall, the deep layers and vascular structures may become involved.

MODES OF ACQUISITION

1. Food allergy may have its inception in intrauterine life. In some instances the fetus may come in contact with unchanged food proteins via the placenta. Cravings of pregnancy may be responsible for the ingestion of excess protein food. Some of these proteins escape digestion and enter the maternal blood stream, thus gaining access to the fetal circulation through the highly permeable placental membrane.

2. Sensitization may also be acquired via breast milk.

3. Occasional feedings of raw milk during the neonatal period may sensitize the breast fed infant.

4. Overfeeding, whether in infancy or in childhood, in good health or during convalescence from disease, may result in sensitization. This is particularly true with raw or lightly cooked foods.

5. Fad diets, excessive indulgence in seasonal or bizarre foods, may be incriminating factors.

CLINICAL OBSERVATIONS ON ALLERGIC ABDOMINAL PAIN

Among early observations on abdominal pain were those of Moro⁴ and of Lust,⁵ who described a recurrent colicky pain in the region of the umbilicus ("navel colic"). These authors offered no positive clue as to its pathogenesis. However, Schloss⁶ was one of the first to place certain cases of abdominal pain in the category of allergy. He described cases of gastrointestinal allergy without positive cutaneous reactions. These infants regularly developed diarrhea, abdominal pain and vomiting when the smallest amounts of raw whole milk were ingested. Moderate amounts of thoroughly boiled milk were tolerated. Similar observations were later made by O'Keefe.⁷

Evidence that abdominal pain of allergic origin may be present without the confirmatory evidence of a positive skin test was fortified for me when I⁸ observed the case of a pair of twins. When these infants were given a raw milk formula, 1 twin developed urticaria

From the Department of Pediatrics, New York University College of Medicine.

Read in a symposium on "Abdominal Pain in Children" before the Section on Pediatrics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

1. Reports have appeared of definite allergic abdominal pain resulting from the use of pollens given orally for desensitization and orally administered vaccines. Allergic episodes may also result from any highly antigenic substance, such as endocrine products or other organic medications. This holds equally true for drug sensitivity to such substances as acetalsalicylic acid, bromides, sulfonamides and quinine.

2. Code, C. F., and Hester, H. R.: Blood Histamine During Anaphylactic Shock in Horse and Calf, *Am. J. Physiol.* 127: 71, 1939.

3. Ratner, B.: Allergy, Anaphylaxis and Immunotherapy, Baltimore, Williams & Wilkins Company, 1943, p. 620.

4. Moro, E., in Pfaundler, M., and Schlossman, A.: *Handbuch der Kinderheilkunde*, ed. 5, Leipzig, F. C. W. Vogel, 1910, p. 19.

5. Lust, F.: *Diagnostik und Therapie der Kinderkrankheiten*, ed. 7, Vienna, Urban & Schwarzenberg, 1932, p. 177.

6. Schloss, O. M.: Allergy in Infants and Children, *Am. J. Dis. Child.* 19: 433 (June) 1920.

7. O'Keefe, E. S.: Protein Sensitivity in Children with Negative Cutaneous Reactions, *J. A. M. A.* 80: 1120 (April 21) 1923.

8. Ratner, B.: Food Allergy in Infants, *Am. Med.* 23: 863, 1912.

and the other developed abdominal pain, vomiting and diarrhea. Allergic skin tests proved positive to lactalbumin and whole milk only in the infant who developed urticaria; no skin reaction was ever obtained in the infant who had gastrointestinal symptoms. A number of subsequent clinical exposures to milk corroborated these observations. It is a common experience that local organ sensitivity may precede a generalized sensitivity; thus certain tissues of the body (e. g. the intestinal tract in this instance) may be sensitive, while others (e. g. the skin) are not.

In a number of papers Osler⁹ described a group of patients with purpura, urticaria and angioneurotic edema who in addition had gastrointestinal symptoms. He noted that abdominal pain was a common symptom and that cases occurred with or without simultaneous cutaneous eruptions. In cases simulating appendicitis, the concomitant cutaneous eruption would tend to rule out a surgical abdomen. In 1914 he¹⁰ pointed out the relation of these abdominal conditions to allergy and serum rashes. This syndrome is often referred to as "visceral erythema or lives." Alexander and Eyer- mann¹¹ also observed patients with abdominal pain who in addition manifested urticaria and purpura. A striking similarity to Henoch's purpura was emphasized. Although the elimination of certain foods caused the disappearance of symptoms, positive cutaneous reactions to foods were not obtained.

Laroche and his associates¹² and Rowe¹³ in their respective monographs cite cases ranging from mild abdominal discomfort to most intense abdominal crises, associated in certain instances with other allergic manifestations but more commonly showing no other allergic manifestations. As a rule the abdominal pain occurs promptly after eating the offending food, but it may appear from several minutes to an hour after ingestion. These symptoms may persist for several minutes, hours or even longer. When the abdominal symptoms are associated with other allergic manifestations the diagnosis is readily made. However, it is in those cases in which no associated allergic symptoms occur and there is an absence of positive skin tests that diagnostic difficulties arise. Others who have discussed this subject are Bray,¹⁴ Duke,¹⁵ Rackemann,¹⁶ Hollander,¹⁷ Lintz,¹⁸ Alexander,¹⁹ Eyer- mann²⁰ and Fries and Merrill.²¹

It might be of interest in passing to mention here the paper of McCarthy and Wiseman,²² who present

provocative evidence that pylorospasm of early infancy and its associated abdominal pain may in certain instances be due to food allergy.

DIAGNOSIS

Abdominal pain of allergic origin should always be ruled out whenever abdominal symptoms are present. It may be considered in three categories:

1. *Abdominal pain as a minor symptom.* It may appear with or without an acute attack of urticaria or asthma and usually is of little or no significance. Many children complain of abdominal pain in the course of an asthmatic or urticarial attack.

2. *Recurrent abdominal pain.* This occurs most frequently in children. Many cases give a history of colic and vomiting during infancy. It is usually associated with other dermal or respiratory allergic manifestations. The pain is usually localized in the region of the umbilicus but may also be present in the epigastrium, the paraumbilical region or the right lower quadrant. It is cramplike in character. The pain may last for several minutes or hours and may recur at frequent intervals. There are, as a rule, associated gastrointestinal symptoms such as diarrhea, flatulence, mucous stools, nausea, vomiting or even constipation. Most often this train of symptoms follows the ingestion of a particular food. Concurrent urticaria or asthma may supervene. Fever is as a rule absent but on occasion may be present. Localized tenderness may be present during the attack but is frequently absent. Occasionally a distended colon may be palpated.

A careful history of food dislikes may offer helpful clues. Protein skin tests for foods may be negative if the gastrointestinal symptoms are the only ones present but as a rule are positive if the condition is associated with urticaria or asthma. The eosinophil count may be increased, but this is not usual except in chronic cases. The entire picture may be reproduced by having the patient ingest the suspected food.

3. *Severe abdominal pain simulating an acute surgical condition of the abdomen.* Before a surgical condition of the abdomen can be considered, it is essential to give due consideration to the following points favoring allergy: (a) a previous history of gastrointestinal symptoms, or food sensitivities; (b) a history of other forms of allergy; (c) the presence of eosinophilia; (d) severe abdominal pain with physical signs that are atypical or negative. However, as was pointed out, an allergic abdominal disturbance may actually lead to a surgical condition of the abdomen. Therefore, even in the face of an allergic background, if the signs resemble appendicitis or intussusception surgical intervention may become imperative.

In all cases of suspected allergic abdomen, an injection of epinephrine subcutaneously, ephedrine sulfate by mouth or atropine or its derivatives given orally or subcutaneously may promptly relax the allergic spasm and clarify the diagnosis.

ROENTGEN DIAGNOSIS

The most concrete evidence for muscle spasm causing abdominal pain in allergy is afforded by roentgen studies. The findings are mainly those of (a) pylorospasm, (b) delayed emptying of the stomach and (c) hypertonicity and hyperperistalsis of the intestine.

Crispin,²³ in studying a case of angioneurotic edema associated with abdominal pain and hematemesis,

9. Osler, W.: On the Visceral Complications of Erythema Exudativum Multiforme, *Am. J. M. Sc.* 110: 629, 1895; On the Surgical Importance of the Visceral Crises in the Erythema Group of Skin Diseases, *ibid.* 127: 751, 1904.

10. Osler, W.: The Visceral Lesions of Purpura and Allied Conditions, *Brit. M. J.* 1: 517, 1914.

11. Alexander, H. L., and Eyer- mann, C. H.: Food Allergy in Henoch's Purpura, *Arch. Dermat. & Syph.* 16: 322 (Sept.) 1927; Allergic Purpura, *J. A. M. A.* 92: 2092 (June 22) 1929.

12. Laroche, G., and others: *Alimentary Anaphylaxis*, translated by M. P. Rowe and A. H. Rowe, Berkeley, Calif., University of California Press, 1930.

13. Rowe, A. H.: Food Allergy, Philadelphia, Lea & Febiger, 1931.

14. Bray, G. W.: Recent Advances in Allergy, Philadelphia, P. Blakiston's Son & Co., 1934.

15. Duke, W. W.: Food Allergy as a Cause of Abdominal Pain, *Arch. Int. Med.* 28: 151 (Aug.) 1921.

16. Rackemann, P. M.: The Importance of Foreign Proteins and Other Foreign Substances in the Etiology of Disease, *Internat. Clin.* 1: 56, 1922.

17. Hollander, E.: Mucous Colitis Due to Food Allergy, *Am. J. M. Sc.* 174: 495, 1927.

18. Lintz, W.: The Diagnosis and Treatment of 225 Cases of Gastrointestinal Allergy, *New York State J. Med.* 34: 282, 1934.

19. Alexander, H.: Localized Allergy, *M. Clin. North America* 11: 399, 1927.

20. Eyer- mann, C. H.: The Dietitian and Food Allergy, *J. Am. Dietet. A.* 12: 1, 1936.

21. Fries, J. H., and Merrill, G. A.: Allergic Abdominal Pain in Children, *Am. J. Dis. Child.* 52: 1107 (Dec.) 1936.

22. McCarthy, M. P., and Wiseman, J. R.: Pylorospasm, an Infantile Allergic Manifestation, *M. Woman's J.*, December 1937.

23. Crispin, E. L.: Visceral Crises in Angioneurotic Edema, in *Collected Papers of the Mayo Clinic*, Philadelphia, W. B. Saunders Company, 1917, vol. 7, p. 823.

observed roentgenologically a lesion situated near the pylorus, which on operation was found to be angio-neurotic edema. Christian²⁴ and Duke²⁵ were also among the early workers to obtain roentgen evidence of allergic disturbances. Andresen²⁶ suggested the use of x-rays in diagnosis, as did Gay.²⁶ In 1927 Eyer-mann²⁷ published the first report of the effects of the deliberate feeding of an allergenic food on the function of the gastrointestinal tract. His observation disclosed no effect in the stomach or small intestine but dishar-monic tonus in the colon, hypotonus being present in the cecum and ascending colon, and hypertonus in the transverse and pelvic colon. A decidedly spastic trans-verse colon was demonstrated by Vaughan²⁸ in a food sensitive patient. Rowe²⁹ made roentgen studies after specific sensitizing foods were fed and found gastric retention and hypermobility and colonic spasticity. Others using intentional feedings to induce allergic reac-tions were Serio,³⁰ Hansen and Simonsen,³¹ Hampton,³² Wing and Smith,³³ and Cooke.³⁴

Fries and his co-workers³⁵ have made most careful and extensive studies in food allergic children. They demonstrated that peristaltic disturbances in the various parts of the gastrointestinal tract followed the feeding of allergenic foods such as egg, milk, nuts and corn. These disturbances were manifested as gastric retention, increased or decreased motility of the gastrointestinal tract, spasm or dilatation of the stomach or intestine. Gastric retention was the most common finding. It was further noted that subjective complaints referable to the gastrointestinal tract usually accompanied the objective findings.

TREATMENT

For the acute episode, the treatment of choice is epinephrine given subcutaneously. It is perhaps wisest to use epinephrine first, to be followed by atropine, belladonna or syntropan orally in order to reduce the incidence of recurrences. It is also of value to use sedation, e. g. paregoric, phenobarbital or bromides, and to continue with a combination of atropine and pheno-barbital for a few days following the acute episode.

From the long range point of view the problem must be attacked by ferreting out the offending food. When it has been discovered, it should be completely eliminated from the diet, particularly if taken in the raw state. The incriminating food must be restricted from the diet for a prolonged period. Subsequently small amounts of the offending protein may be reintroduced into the diet until a tolerance is gradually established.

It has been my practice for many years to prescribe an "allergenically denatured diet" to all food allergic patients. This principle of denaturation is based on the fact that heated albumin fractions are coagulated and therefore cannot act as active allergens.³⁶ This pro-cedure is applicable whether the offending food protein is known or is not known. In the latter case all the foods should be thoroughly cooked. Adequate amounts of ascorbic acid (50 mg.) should be given to compensate for the vitamin C lost in cooking. In the former instance only the incriminating food or foods need be subjected to heat. Following such a procedure (i. e. elimination of all raw or lightly cooked foods), if there are no recurrences of abdominal crises over a period of several months the offending food can be introduced into the diet in the raw state in very small doses, gradually increasing it until tolerance is established. After toler-ance is established the offending food or foods should be consumed regularly so that tolerance may be main-tained.³⁷

CONCLUSIONS

1. Abdominal pain in children may be allergic in nature.
2. Such pain may at times present difficulty in diag-nosis. If no other real cause is ascertained, allergy should be suspected.
3. In evaluation of the allergic phenomenon with respect to abdominal pain, the following pathogenesis must be borne in mind:
 - (a) All the native albumin fraction of protein foods is not always readily broken down by the intestinal enzymes and part may pass unchanged into the blood stream and produce an allergic reaction.
 - (b) Sensitization must previously have been estab-lished before contact with the offending protein will result in an allergic reaction.
 - (c) Sensitization may be acquired in various ways.
 - (d) The surface as well as the deeper structures of the wall of the digestive tract may be affected.
 - (e) Any part of the digestive tract, from the mouth to the rectum, may be affected.
4. Allergic abdominal pains may be initiated by (a) spasm of the gastrointestinal smooth muscle, (b) wheal formation in the gastrointestinal wall or (c) spasm of the small vessels of the gastrointestinal walls or (d) a combination of these factors.
5. As a result of the allergic response, signs of appendicitis or intussusception may be simulated in all essentials.
6. Although the allergic reaction is reversible, if the disturbed physiology is too pronounced or prolonged the harmless allergic reaction may actually be converted into a typical acute appendical involvement or intussus-ception and should promptly be treated surgically.
7. Pure allergy of the gastrointestinal tract, i. e. uncomplicated by a concomitant eczema, urticaria or asthma, as a rule does not present the diagnostically valuable positive protein skin test.
8. The diagnosis must at times rest on careful his-torical data relative to the ingestion of certain foods.
9. Of further diagnostic value is the prompt relief from pain from the subcutaneous injection of epineph-rine, or from atropine given orally.

24. Christian, H. A.: Visceral Disturbances in Patients with Cutaneous Lesions of the Erythema Group, *J. A. M. A.* **69**:325 (Aug. 4) 1917.

25. Andresen, A. F. R.: Gastro-Intestinal Manifestations of Food Allergy, *J. M. Soc. New Jersey* **31**:402, 1934.

26. Gay, L. P.: Radiological Demonstration of an Allergic Reaction in the Mucosa and Musculature of the Colon, *Am. J. Digest. Dis. & Nutrition* **3**:181, 1936.

27. Eyer-mann, C. H.: X-Ray Demonstration of Colonic Reaction in Food Allergy, *J. Missouri M. A.* **24**:129, 1927.

28. Vaughan, W. T.: Allergic Factor in Mucous Colitis, *South. M. J.* **21**:894, 1928.

29. Rowe, A. H.: Roentgen Studies of Patients with Gastrointestinal Food Allergy, *J. A. M. A.* **100**:394 (Feb. 11) 1933.

30. Serio, F.: La sintomatologia radiologica della anafilassi gastro-intestinale, *Riforma med.* **48**:1742, 1932.

31. Hansen, K., and Simonsen, M.: Röntgenologische Beobachtung und Darstellung der allergischen Gastritis und des allergischen Pylorospasmus, *Röntgenpraxis* **9**:145, 1937.

32. Hampton, S. F.: Henoch's Purpura Based on Food Allergy, *J. Allergy* **12**:579, 1941.

33. Wing, W. M., and Smith, C. A.: Spontaneous and Induced Sensi-tivity to Foodstuffs: X-Ray Studies of the Small Intestine in Man and Guinea Pig, *J. Allergy* **14**:56, 1942.

34. Cooke, R. A.: Protein Derivatives as Factors in Allergy, *Ann. Int. Med.* **16**:71, 1942.

35. Fries, J. H., and Zizmor, J.: Roentgen Studies of Children with Alimentary Disturbances Due to Food Allergy, *Am. J. Dis. Child.* **54**:1259 (Dec.) 1937. Fries, J. H., and Mogil, M.: Roentgen Observations on Children with Gastrointestinal Allergy to Foods, *J. Allergy* **14**:310, 1943.

36. Ratner, B., and Gruehl, H. L.: Antigenic Properties of Milk, *Am. J. Dis. Child.* **40**:287 (Feb.) 1943. *Antigenic Properties of Certain Cereal Foods and Breweries*, *J. Allergy* **16**:377, (April) 1939.

37. Ratner, B.; Hill, L. W., and Donally, H. H.: Round Table Dis-cussion on Food Allergy in Children, *J. Pediat.* **10**:653, 1940.

10. Of further diagnostic value are roentgen findings when a test meal of the offending food is given: (a) pylorospasm, (b) delayed emptying of the stomach, (c) hypertonicity and hyperperistalsis of the intestine.

11. Treatment of the acute episode is best effected through the use of epinephrine given subcutaneously or atropine given orally.

12. Treatment, from the long range point of view, consists in (a) discovery of the offending food or foods, (b) the elimination of such food or foods or (c) the use of incriminating foods in "allergenicallly denatured" form and (d) the building up of a tolerance for the offending foods.

50 East Seventy-Eighth Street.

ABSTRACT OF DISCUSSION

DR. J. VICTOR GREENEBAUM, Cincinnati: The complaint of abdominal pain is a subjective symptom and demands careful analysis of many factors before one makes any final diagnosis, especially the diagnosis of pain due to allergy. Children suffering with anorexia or having pronounced dislike for certain foods often complain of abdominal pain merely on seeing food or on being asked to eat. Breakfast is the most frequent meal for this type of complaint. On the other hand, many children eat foods which they know beforehand are not good for them and which already have caused upsets. Such foods are chocolate, ice cream, excessive amounts of rich candy and the like. These foods produce attacks of abdominal pain, vomiting, chills, high fever, aching muscles and prostration, all of which symptoms are quickly relieved by getting the offending food out of the gastrointestinal tract by physics or enemas. Dr. Ratner's conception of sensitization during the intrauterine period may help to explain many early feeding difficulties which frequently disappear after treatment by the fourth or fifth pediatrician. Either the right food combination is hit on or the infant finally loses its sensitization to the offending food. The later cutaneous and respiratory disturbances, such as eczema, urticaria, dermatitis and asthma, of these infants frequently bear out this diagnosis. Gastric retention in the x-ray, mentioned by Dr. Ratner, is an excellent diagnostic help. Skin tests in my opinion also have been disappointing as diagnostic aids in this condition. Confirming Dr. Ratner's allusion to the pathologic sequels of frequent allergic abdominal attacks, I am permitted by Dr. Philip Wasserman, the pathologist of the Jewish Hospital of Cincinnati, to refer to some unpublished data. Dr. Wasserman is collecting a series of surgical cases of gallbladder and appendix infections the microscopic examination of which shows allergic reactions consisting of edema, plasma cells, and great cellular response of eosinophils in place of the usual polymorphonuclear cells. These happen to be in adults. Subsequent investigations reveal that food allergies were prominent in the past history. Perhaps proper handling of this condition in childhood might have prevented them from occurring. I should like to ask Dr. Ratner to discuss the use of histaminase and pancreatic extracts in the handling of these food allergies which produce abdominal pain.

DR. AMBROSE MCGEE, Richmond, Va.: In the past few years I have been able to collect 21 cases of fetal hiccups. In 5 of these it was possible to give the mother a food and at will to produce the hiccups in the unborn child. These children later were of a highly allergic type or whatever you want to call them. They were always crying, they were hungry or else they were uncomfortable. They had mucus in the stool and rashes, and so on. I believe that milk is the greatest food in the world for those who can take it, but even though it is a basic food there are a few who cannot take it. I have seen too many of them who stopped milk and did better. After they get to the stage where they are on something else besides milk, I think the problem is a little different.

DR. BRET RATNER, New York: Many children who cannot tolerate milk have other allergies besides their milk sensitivity. I have made it a practice to use evaporated milk, thoroughly heated, but always search for other secondary causes of the

possible allergy. I for one do not believe that allergy alone causes abdominal pain. The longer I practice allergy the more often I make the diagnosis of no allergy present. Dr. Greenebaum asked the question about histaminase and pancreatic extracts. I should like to answer that question because I think that histaminase has been one of the most fraudulent substances ever presented to the medical profession. Best and McHenry, who discovered histaminase, insisted that this substance was absolutely worthless for clinical medicine. So you see what my stand is. As to the pancreatic extracts in the use of food allergies, it seems to me that the giving of pancreatic extracts or foods that have been broken down by pancreatic digestion is unnecessary. The best method to my mind is to use denatured heated foods, such as thoroughly cooked cereals and cooked eggs. Avoid raw eggs, raw milk, raw wheat, avoid cakes and ice cream, and avoid nuts and fish. Give these thoroughly heated foods and let the pancreatic juices of the intestinal tract, which have a great predilection for cooked foods, digest them. Because the heated food albumins are coagulated, they cannot act as allergens and therefore cannot induce allergic reactions.

BLOOD AND SPINAL FLUID TESTS FOR SYPHILIS IN MALARIAL PATIENTS

LIEUTENANT COLONEL HAROLD W. POTTER

MEDICAL RESERVE, OFFICERS' RESERVE CORPS

CAPTAIN LEWIS H. BRONSTEIN

MEDICAL CORPS, ARMY OF THE UNITED STATES

AND

CAPTAIN CHARLES M. GRUBER

MEDICAL CORPS, ARMY OF THE UNITED STATES

There is practically complete agreement that malaria will be one of the postwar problems in the United States, if not from the standpoint of public health because of mosquito control, then certainly from the standpoint of economic loss and medical diagnosis and treatment. A problem that is usually not considered in relation to malaria is that of the possibility of biologic false positive tests for syphilis. Making a diagnosis of syphilis on a patient in this group may produce greater disaster than the malarial disease itself.

This study was originally undertaken at the suggestion of Lieut. Col. Thomas Fitz-Hugh, medical consultant for the Third Service Command, in an attempt to discover the effects of malaria on the spinal fluid Wassermann reaction. In setting up the procedure it became evident that a blood Kahn and blood Wassermann test taken on the same day would be of value in judging any spinal fluid results. It would also help solve the problem of the incidence of biologic false positive reactions in this disease and indicate safeguards that could be set up before a definite diagnosis of syphilis should be made.

One hundred consecutive malaria admissions had blood and spinal fluid taken within forty-eight hours of entrance to the hospital. These hundred patients gave no history of syphilis and none had had syphilis registers opened on them. Those who had positive or doubtful blood tests had repeat tests done about once a week until negative reactions were obtained. These procedures were performed in the laboratory at the same time that the routine tests for the rest of the hospital were done. Another control on the laboratory technic is the periodic checkup made by the Army with unknown serums. It is realized that quantitative titers

Technician Fifth Grade Clifford Reader performed the Wassermann and Kahn tests.

would have been of great value in this study, but the manpower shortage made it impossible to do this. Since the general practitioner does not use quantitative titers, our study may be of more practical value to him.

TABLE 1.—Results of Tests

Positive Tests			
Kahn positive	Wassermann positive		2
Kahn positive	Wassermann doubtful		2
Kahn positive	Wassermann negative		5
Kahn negative	Wassermann positive		
Total			12
Doubtful Tests			
Kahn doubtful	Wassermann doubtful		4
Kahn doubtful	Wassermann negative		1
Kahn negative	Wassermann doubtful		5
Total ...			10

SPINAL FLUID STUDIES

The spinal fluid Wassermann reaction was negative in all of the 100 cases. In view of the fact that 12 per cent of the men had positive blood reactions and 10 per cent had doubtful reactions, it appears that the

which some deviation of the fluid findings from the accepted normal occurred were there any symptoms or signs suggesting neurologic pathologic changes.

BLOOD SERUM REACTIONS

Table 1 shows the breakdown of the number of positive and doubtful tests. It is seen that 12 per cent showed a positive reaction in either or both of the tests used. Ten per cent showed a doubtful reaction. In all these cases the result became negative within thirty days. The doubtful reactions became negative sooner than the positive reactions. Table 2 shows the course of the blood Kahn and Wassermann reactions of these 22 patients. A definite progression from positive to doubtful to negative can be seen in some of the cases. In only 1, case 14, was there a change from doubtful to positive during the course of testing. This patient required the longest time for his reactions to become negative.

This definite evidence of biologic false blood tests led us to two standard textbooks on the subject of serologic tests for syphilis. It was felt that a physician faced with this problem would consult a book of this type in an attempt to evaluate such a finding in his

TABLE 2—Course of Positive and Doubtful Tests

Case	Date	Kahn	Wasser- mann	Date	Kahn	Wasser- mann	Date	Kahn	Wasser- mann	Date	Kahn	Wasser- mann	Date	Kahn	Wasser- mann
1	7/4	±	0	7/9	0	0									
2	7/7	±	0	7/11	0	0									
3	7/6	±	±	7/9	±	0	7/18	0	0						
4	7/8	±	±	7/11	0	0	7/18	0	0						
5	7/8	±	±	7/11	±	0	7/18	0	0						
6	7/1	0	+	7/11	0	—	7/18	0	0						
7	7/11	+	a/c	7/18	±	0	7/23	+	0	7/27	0	0			
8	7/9	+	+	7/12	—	0	7/23	0	0						
9	7/11	+	±	7/18	+	0	7/23	0	0						
10	7/11	+	±	7/18	+	0	7/23	0	0						
11	7/18	0	±	7/23	0	0	7/27	0	0						
12	7/18	+	—	7/23	±	0	7/27	0	0						
13	7/19	0	+	7/27	0	0	8/3	+	—	8/10	±	±	8/17	0	0
14	7/19	±	±	7/27	0	±	8/3	+	—	8/10	±	±	8/17	0	0
15	7/24	±	±	8/3	0	0	8/10	0	0						
16	7/31	0	±	8/7	0	0	8/18	0	0						
17	8/1	0	±	8/8	0	0									
18	8/3	0	+	8/11	0	±									
19	8/4	0	+	8/11	0	0									
20	8/4	0	±	8/11	0	0									
21	8/4	0	+	8/11	0	0									
22	8/7	0	+	8/15	0	0									

factors which produce the biologic false result in the blood are not present in the spinal fluid. The spinal Wassermann reaction, of course, is of no value in judging whether or not the blood serologic reactions indicate the presence of syphilitic infection.

One spinal fluid had 17 cells, 6 of which were polymorphonuclears and 11 lymphocytes. The total protein in this fluid was 25 mg. and the colloidal gold reaction was normal. The blood Kahn and Wassermann reactions of this patient were negative. The remainder of the fluids had 10 or less cells—a normal finding. There was no explanation for this isolated case.

In 3 cases the total protein was 75 mg. per hundred cubic centimeters. In the remainder it was 50 mg. or less. The colloidal gold reaction, cell count and spinal Wassermann were negative in each of the 3 cases. One of these men had doubtful blood Kahn and blood Wassermann reactions which were negative four days later. The second had a positive blood Kahn and a negative blood Wassermann reaction on admission. The Wassermann reaction remained negative and the Kahn reaction became negative sixteen days later. The third patient had negative blood Kahn and Wassermann reactions.

All of the colloidal gold reactions were within normal limits. In none of the cases that have been cited in

patient. Eagle¹ presents a review of the literature up to 1937 and suggests further study of the problem because of the conflicting reports. These reports vary from an incidence of less than 1 per cent to 50 to 60 per cent. His explanation of such a discrepancy is that in many instances either a flocculation or a complement

TABLE 3—Result of Test in Relation to Origin of Infection

Area	Cases	Positive	%	Doubtful	%
Solomon Islands	40	5	61	5	10.2
Mediterranean	2	0	15.0	2	9.1
New Guinea	1	0	23.0	2	15.3
Panama	4	0	0.0	0	0.0
West Africa	1	0	0.0	0	0.0
Central Africa	1	1	100.0	0	0.0
Total	110				

fixation test was done. In others there was no accurate gage of the incidence of syphilis in the population from which the malarial patients were taken. Kolmer² states that the incidence of false positive tests in natural and induced malaria varied from 11.1 to 19.4 per cent.

¹ Eagle, H. The Laboratory Diagnosis of Syphilis, St. Louis, C. Mosby Company, 1937, p. 314.
² Kolmer, J. A. Clinical Diagnosis by Laboratory Examination, New York, D. Appleton Century Company, Inc., 1943, p. 554.

4. Jones, T. R., and Lockhart, J. A.: An Occupational Disease of Electric Welders, *Texas State J. Med.* 39: 532-534 (1 ch.) 1944. Borg and McLaughlin.² Enzer and Sander.⁶

In baritosis³ the lungs are studded with small sharply circumscribed nodules which in the experimental animal are due to collections of mineral dust and do not show evidence of fibrous tissue overgrowth. Individuals with baritosis have no respiratory symptoms and do not exhibit increased susceptibility to tuberculosis.



Fig. 1 (M. C., Sept. 14, 1943).—Pseudo-nodulation due to siderosis. The pseudo-nodulation is evenly distributed throughout both lung fields. These are much more flocculent and simulate mottling more than any of the other cases. (Because this man had been in the anthracite mines for nineteen years prior to eighteen years spent as a metal grinder, we were unwilling to exclude the possibility of siderosilicosis.)

Without being able to state definitely the nature of the process, Doig and McLaughlin⁵ described the roentgen appearance of fine nodulation in 6 of 16 electric arc welders. They considered the possibility of modified asbestosis (the rods of the workers were covered with asbestos) a modified reaction to silica (the rod coating contained sodium silicate), inflammatory changes from the gases and iron oxide dust and the

remote possibility that the iron particles themselves might be casting the shadows, in the absence of fibrosis. Enzer and Sander⁶ examined 26 electric arc welders who worked an average of nineteen years with metal containing more than 99 per cent of iron and 0.1 per cent free silica. Bare rods had been used up to three years prior to their study. Five of the workers showed a roentgen appearance simulating prenodular fibrosis, and 5 others exhibited nodular shadows simulating modified silicosis. None of them had respiratory symptoms or were disabled. One of the workers who had shown fine nodulation in both lungs died of lobar pneumonia four days after a traumatic vertebral fracture. Necropsy was performed approximately sixteen months after death. It was stated that the tissues were sufficiently well preserved to permit satisfactory analysis. Throughout both lungs and the adjacent lymph nodes there was fine black pigmentation. The pigment in the lungs was distributed chiefly in the perivascular lymphatics, the subpleural spaces and the interalveolar septums. No fibrosis, no scarring and no phagocytic cells were seen. Although quantitative analysis for iron was not done.

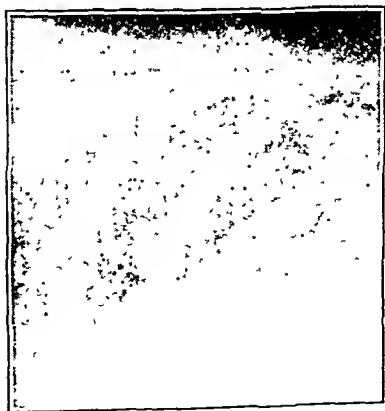


Fig. 2 (M. C.).—Close-up to show details of pseudo-nodulation.

Enzer and Sander⁶ examined 26 electric arc welders who worked an average of nineteen years with metal containing more than 99 per cent of iron and 0.1 per cent free silica. Bare rods had been used up to three years prior to their study. Five of the workers showed a roentgen appearance simulating prenodular fibrosis, and 5 others exhibited nodular shadows simulating modified silicosis. None of them had respiratory symptoms or were disabled. One of the workers who had shown fine nodulation in both lungs died of lobar pneumonia four days after a traumatic vertebral fracture. Necropsy was performed approximately sixteen months after death. It was stated that the tissues were sufficiently well preserved to permit satisfactory analysis. Throughout both lungs and the adjacent lymph nodes there was fine black pigmentation. The pigment in the lungs was distributed chiefly in the perivascular lymphatics, the subpleural spaces and the interalveolar septums. No fibrosis, no scarring and no phagocytic cells were seen. Although quantitative analysis for iron was not done.

⁵ S. Doig, A. T., and McLaughlin, A. I.: X-Ray Appearances of the Lungs of Electric Arc Welders, *Lancet* 1: 771-775 (April 4) 1936.
⁶ G. Enzer, N., and Sander, D. A.: Chronic Lung Changes in Electric Arc Welders, *J. Indust. Hyg. & Toxicol.* 20: 333-350, 1938.

the prussian blue test was obtained in the stained sections and in the unstained residue after microincineration. No quartz was identified. The authors concluded that deposition of iron oxide was responsible for the roentgen appearance of nodulation simulating silicosis.

To the list of recorded instances of benign pneumoconiosis in baryta miners (baritosis) and in electric arc welders (siderosis) we are adding a group of cases in which we believe that siderosis occurred from prolonged exposure to finely divided iron dust from metal grinding. We have knowledge of 1 other example of benign pneumoconiosis from a different type of metal processing and there is every reason to believe that, as experience grows, many other instances of benign pneumoconiosis from metal processing and from other industrial operations will be added to this group.

In September 1943 we were requested to examine M. C., a man aged 53, who for the past eighteen years had been employed as a dry grinder for a bearings company. One month previously fluoroscopy in another hospital had revealed silicosis, he had been told. He considered himself to be in good health until

Diagnosis of Pulmonary Condition Found in Eleven Metal Grinders

Name	Age	Occupational History	Roentgen Diagnosis
M. C. (figs. 1 and 2)	53	Coal miner 19 yrs.; grinder 18 years	Modified silicosis (siderosilicosis)
L. B.	34	Grinder 12 years	Siderosis with pseudonodular predominance; pulmonary tuberculosis (inactive)
J. B.	29	Grinder 3 years	Normal chest
E. B.	51	Coal miner 2½ yrs.; grinder 3 years	Normal chest
A. O.	31	Grinder 4 years	Normal chest
W. M.	28	Grinder 4 years	Normal chest
C. P.	29	Grinder 4 years	Bronchitis
F. S.	40	Grinder 13 years	Siderosis with pseudonodular predominance; pulmonary emphysema
A. S.	45	Grinder 14 years	Siderosis with well advanced pseudonodular predominance; pulmonary emphysema
E. S. (figs. 3 and 4)	63	Grinder 17 years	Siderosis with fine pseudo-nodulation; pulmonary emphysema
E. W.	37	Grinder 7 years	Normal chest

about two years before examination, when he developed dyspnea on exertion, fatigue and gradual loss of weight. These symptoms did not incapacitate him for work. His occupational history was pertinent. He was born in the anthracite region of Pennsylvania, left school at the age of 9 and went to work picking slate in a coal breaker, working sixty hours a week for three or four years. He then became a jig operator for two years, engaged in separating slate from coal by the use of running water. He worked as a laborer outside the mines for several years and then returned to the mines as "fan boy." He then became a coal car operator and a mule driver. He spent nineteen years in the anthracite mines in these various occupations but never mined coal. In 1925 he went to work for his present employer, where he has been engaged continuously as a dry grinder. Physical examination gave essentially normal results except for the presence of slight pulmonary emphysema.

It was our primary impression that this patient by roentgenogram had simple silicosis with nodular predominance.

We have since examined 10 other grinders employed by the same company, and the findings in some of them, together with other information which we obtained, to which we will refer presently, caused us to question seriously our diagnosis of silicosis in the first case. The pertinent data of the 11 cases are presented in the

accompanying table. It will be noted that 4 workers who had been grinders for twelve, thirteen, fourteen and seventeen years respectively exhibited roentgenographic evidences of nodular predominance. One man in this group (L. B.) showed a coincident pulmonary lesion, probably tuberculous. He had no clinical manifestations of active infection.

Five employees who had been metal grinders for from three to seven years had normal chest roentgenograms. The remaining worker in this group (C. P.) had been a grinder for only four years. At our examination he had fever, tachycardia and upper respiratory infection with clouding of both maxillary sinuses by fluoroscopy. The roentgenogram showed prominence of the lung markings similar to the shadows of beading or early nodulation. We were inclined to believe that in this case the roentgen appearance was due to bronchosisinuitis.

Of the 11 grinders whom we examined, only the first one (M. C.) had symptoms referable to the respiratory tract. He had been in the anthracite mines for nineteen years but had never mined coal. He did not develop respiratory symptoms until sixteen years later, having been a metal grinder continuously for all this time. However, because of his symptoms, occupational history and chest roentgenogram, which showed an appearance more closely simulating mottling than did any of the others, we were unwilling to put him in the benign pneumoconiosis group, although we could be persuaded easily that he really belonged there. The others, including L. B., who had a coincident pulmonary lesion, probably tuberculous, had no symptoms and considered themselves to be in normal health.

Following these examinations we were granted the privilege of visiting and inspecting the bearings company, where approximately 50 grinders are employed. Seventy-five per cent of the grinding is dry and 25 per cent is wet. The metal ground in the manufacture of bearings is chrome vanadium and chrome molybdenum tool steel containing about 98 per cent iron, about 2 per cent alloy and not more than 0.2 per cent silica. Artificial abrasive wheels composed of bakelite, silicon carbide (carborundum) and aluminum oxide (aloxite) have been used exclusively for the past seven years.

Obviously, the metal which was being ground in the manufacture of bearings contained an amount of free silica totally insignificant to be a factor in the production of silicosis. It is accepted that artificial abrasive wheels of the type used in this plant do not constitute a silicosis hazard.⁷ Being unable to find any obvious exposure to free silica, we suggested that an

engineering study be made of the dust hazard present in connection with the grinding operations at this plant. This was conducted by the Bureau of Industrial Hygiene of the Department of Health of the Commonwealth of Pennsylvania. In summary the findings were as follows:

Procedure.—Dust samples were collected with a mine safety appliance company midjet impinger, using distilled water as the collecting medium. Dust counts were made by means of the light field technic. Samples for determining particle size of the dust were collected with an electrostatic precipitator. Rafter samples were collected and used as a basis for determining the percentage of free silica in the atmospheric dust. The dust concentration averaged 4,800,000 particles per cubic foot of air. In regard to particle size of the dust, 96.5 per cent were less than 5 microns and 99.5 per cent less than 10 microns. The average percentage of silica, as quartz, in the dust was 0.43.

From these figures it may be deduced that there is no appreciable silicosis hazard in this plant. Therefore we concluded that, with the possible exception of case 1 (M. C.) the correct roentgenographic diagnosis of 4 other grinders who had worked in this plant for from twelve to seventeen years was benign pneumoconiosis (siderosis) with pseudonodulation. The roentgen appearance of this condition is similar in all respects to that found in electric arc welders.

It may be of interest in this report, which records the occurrence of siderosis in a group of metal grinders, to refer to a patient who for the past nine years has exhibited the roentgen appearance of pseudonodulation, although he has never been exposed to any industrial dust of any kind:

J. S. was seen first in December 1934 at the age of 19. In 1931 he had chills, fever and hemoptysis followed by dyspnea, palpitation, loss of weight and fatigue. He had recurrence of similar symptoms in December 1934, accompanied by pain in the right lower quadrant, for which appendectomy was performed, but no evidence of acute inflammation was found. On the fourth postoperative day he was transferred to the medical ward suffering from recurrence of acute rheumatic fever with the cardiac findings of mitral regurgitation and stenosis and partial consolidation of both lungs. He was febrile for five weeks, and his sedimentation rate remained elevated four additional weeks.



Fig. 4 (E. S.).—Close up to show details of pseudonodulation

The leukocyte counts ranged between normal and 24,000. The blood cultures were negative. The tuberculin test, the Wassermann reaction and agglutination tests for typhoid, paratyphoid and undulant fever were negative. No tubercle bacilli, fungi or spirochetal forms were found in the sputum. Sputum culture showed hemolytic *Staphylococcus aureus* in great abundance.

Roentgen examination of the chest on Jan. 8, 1935 showed a diffuse process involving the upper two thirds of both lungs resembling a confluent bilateral pneumonitis. On the right there were some rounded shadows such as one finds in nodulation. Additional roentgen examinations were made of the chest during this hospital admission and many diagnostic possibilities were considered: miliary tuberculosis, fungous infection and a fusospirochetal infection. Passive congestion was excluded

Fig. 3 (E. S., Oct. 16, 1943).—Pseudo nodulation in a man who has been a metal grinder for seventeen years. He has siderosis which simulates the pseudonodulation of the welders, except that here they are finer. This appearance may be modified by pulmonary emphysema. The nodules are very similar to those seen in silicosis and rheumatic pneumonitis.

7. Clark, W. I.: The Dust Hazard in the Abrasive Industry, *J. Indust. Hyg.* 13: 343 346, 1931

because the lesions preponderated in the upper two thirds of the lung fields.

It was concluded that the most likely diagnosis was rheumatic pneumonitis. In this connection it should be mentioned that Dr. Francis C. Wood, who examined the patient shortly after admission, made a diagnosis of acute rheumatic fever with peritoneal pleural and pulmonary involvement. He was discharged from the hospital feeling well and since then has been followed periodically in the cardiac clinic.

Chest roentgenograms have been made at frequent intervals up to May 1944, and since the first year the changes have been largely those of pseudonodulation.

In order to determine if possible the nature of the lung lesion, which has remained essentially unchanged in its roentgen appearance during the past nine years, it is necessary to consider briefly the pulmonary changes which have been described in acute rheumatic fever and to reconcile these with the present roentgen appearance presented by this patient. According to Gouley and Eiman⁸ the specific pulmonary lesion of acute rheumatic fever is nonsuppurative inflammatory vascular damage with perivascular infiltration, for which they suggest the term "perivascular pneumonia." Paul⁹

comments on the frequency with which focal hemorrhagic lesions and extremely hemorrhagic alveolar exudate are found at necropsy. He emphasizes that the usual and expected chronic passive congestion would much more likely have involved the lower lobes. Coburn¹⁰ concludes that diffuse hemorrhagic changes are characteristic of activity of the rheumatic process. Sostman¹¹ states that he has observed several patients with long standing passive congestion from mitral



Fig 5 (April 6, 1943).—Pseudonodulation in a patient who had acute rheumatic fever with rheumatic pneumonitis in 1934. There is no history of exposure to any occupational dust. The pseudonodulation in the upper two thirds of both lung fields had remained practically unchanged since the first year. The cardiac enlargement is due to mitral stenosis and regurgitation.

trical stenosis who have developed a finely nodular roentgen appearance simulating the nodulation stage of silicosis. At necropsy the individual nodules are fibrotic and contain much blood pigment which takes the specific stain for iron. Perhaps it may be found that the roentgen appearance of pseudonodulation in this patient's lungs is due to the shadows cast by iron pigment, the end results of the hemorrhagic perivascular infiltration of acute rheumatic fever. This may be an example of endogenous siderosis from blood destruction.

COMMENT

Many other conditions besides silicosis and benign pneumoconiosis may produce a similar roentgen appearance in the lungs. Among these are metastatic

cancer, Hodgkin's disease, miliary tuberculosis, lipoid pneumonitis, fusospirochetal disease and fungous infections of various kinds.

Differential diagnosis between pneumoconiosis of any variety and any of the conditions that have just been enumerated depends largely on the clinical features of the case, a searching history to establish or exclude an occupational exposure to dust, a thorough physical examination and appropriate laboratory studies.

It is impossible for the roentgenologist to tell the difference between the nodulation resulting from the reactive fibrosis produced by free silica in the lung tissues and the shadows of pseudonodulation cast by the opaque substance itself in benign pneumoconiosis. Therefore, in order to differentiate between silicosis and benign pneumoconiosis one must have recourse to a most detailed occupational history and, whenever possible, first hand knowledge of the environmental conditions surrounding the worker. Frequently an industrial engineering survey of the plant must be made to determine the nature and concentration of the dust to which the employee is exposed.

Advanced silicosis with conglomerate nodulation is often a disabling disease, and when silicosis is complicated by tuberculosis it is fatal. Asbestosis, when extensive, reduces pulmonary ventilation. This may embarrass the right side of the heart and induce cardiac failure.

Benign pneumoconiosis produces nothing but "shadows cast on a roentgenogram."

For these reasons it is unfair to the worker, to labor and to industry for the clinician and the roentgenologist to take their responsibility lightly when they are called on to distinguish between silicosis or asbestosis on the one hand and benign pneumoconiosis on the other.

SUMMARY

To the list of the benign pneumoconioses previously recorded we are adding 4 cases of siderosis occurring in metal grinders. In this group silicosis has been excluded by eliminating significant exposure to free silica. This has been achieved by knowledge of the composition of the metal ground, by being informed of the nature of the abrasive wheels used, by personal inspection of the plant and by the report of an industrial engineering survey.

We know of 1 other example of benign pneumoconiosis resulting from the inhalation of a different metal and it is predictable that, as knowledge of this condition grows, many other instances of benign pneumoconiosis from metal processing and other industrial operations will be added to this group.

It is impossible to differentiate the roentgen appearance of nodulation of silicosis or the pseudonodulation of benign pneumoconiosis from the shadows cast by many pulmonary diseases unassociated with the inhalation of dust. The diagnosis of the pulmonary lesions in such circumstances depends on the collaboration of the internist, the roentgenologist and the laboratory technician.

To differentiate between silicosis and benign pneumoconiosis one must have a detailed knowledge of the occupational history, the environmental conditions of the worker and the precise information regarding the nature, concentration and particle size of the dust to which he is exposed.

Advanced silicosis is usually disabling and, when complicated with tuberculosis, it is fatal.

8. Gouley, B. A., and Eiman, J.: The Pathology of Rheumatic Pneumonitis, *Am. J. M. Sc.* 183: 359-381, 1932.

9. Paul, J. R.: Pleural and Pulmonary Lesions in Rheumatic Fever, *Medicine* 7: 383-410, 1928.

10. Coburn, A. F.: Relationship of the Rheumatic Process to the Development of Alterations in Tissue, *Am. J. Dis. Child.* 45: 933-972 (May) 1933.

11. Sostman, M.: Personal communication to the authors.

Advanced asbestosis produces disability and ultimately may induce death from cardiac failure.

Benign pneumoconiosis produces nothing but shadows cast on a roentgenogram.

We owe to the worker, to labor and to industry our utmost efforts to distinguish between these conditions.

3400 Spruce Street—255 South Seventeenth Street.

ABSTRACT OF DISCUSSION

COLONEL A. J. LANZA, M. C., A. U. S.: All that casts a shadow on an x-ray film of a working man is not necessarily a disabling disease. That is a lesson some of us learned the hard way, and it needs to be emphasized. The men at the University of Pennsylvania Hospital as far back as 1920 were among the first in this country to devote any considerable attention to pulmonary disease among industrial workers. The introduction of x-ray examinations into industry came as a result of pulmonary industrial diseases and their clinical manifestations, which had reached such a point that they attracted general attention; and in the early days we limited our examinations to men who had clinical symptoms and we confirmed our diagnoses by an x-ray film. As the use of the x-rays spread and we became accustomed to seeing films of thousands of apparently healthy persons who were working every day, we began to realize that we would have to change our ideas. We became more and more conservative in our interpretation and more and more insistent that we know the clinical history and especially what type of exposure the individual had experienced not only in his present job but in previous jobs. In dealing with occupational diseases of the lungs it is necessary to build up an occupational history of everything the workman has done since he has left school and gone to work. Otherwise one might fail to find out that perhaps fifteen years before the examination he worked in a granite quarry or in a hard rock mine for a period of years and said nothing about it, and that what one saw on the film might date back a considerable number of years. We began to appreciate the fact that maybe some shadows didn't have any clinical significance. For instance we accumulated a whole series of films out in the Southwest that showed all the appearances of miliary tuberculosis but after we had gathered 125 of them in a small community we realized that there could not possibly be 125 persons with healed miliary tuberculosis in the same community, all of them in the best of health and none ever having been sick. Dr. Pancoast coined a happy phrase that met this situation. He said "Let's not talk about a 'normal' chest. We see normal chests probably only in children. As men grow older and women too you will find all sorts of shadows in their chest x-rays. Let's speak of a 'healthy' chest." If on the basis of increased age and of x-ray technic and interpretation, plus the clinical background and the occupational history of the individual, we can separate those who have a healthy chest from those who have an unhealthy chest, we shall have made a tremendous contribution to the medical practice of industry.

DR. I. S. TROSTLER, Chicago: In examining these chests with the fluoroscope we shall find that the patients with benign pneumoconiosis will have normal respiratory excursions of the diaphragm, and in those cases we are generally pretty safe in making that as a diagnosis, no matter what the shadows are. One of the early, if not the first, roentgen findings in true pneumoconiosis is diminution of the respiratory excursions of the diaphragm.

DR. NORBERT ENZER, Milwaukee: Since the report that Sauder and I made in 1938 we have had three opportunities to confirm that original observation by postmortems on welders who died of conditions entirely unrelated to their occupation. These cases were identical, and one could exchange and shuffle the slides and not be able to identify them as belonging to any one particular case. The lesion in pulmonary siderosis is entirely a macrophage reaction. The iron pigment is taken up by the macrophages; these localize in the perivascular and peribronchial lymphatics and in the alveolar septums. We could not identify any other reaction in the lungs. There is no other inflammatory response, nothing in the nature of a granulomatous

reaction; the macrophages are not converted to fibroblasts. The blood vessels in these lungs show no changes from the normal. When we compare these findings with those occurring in lesions of the lungs which are characterized by granulomatous transformation, the essential feature differentiating the two processes is the absence of a collagenous deposit and all of the steps that go to form collagen; in other words, from the primary response up to the maturation of the fibroblast. Lesions which form collagen ultimately will affect the blood vessels of the lung. I was interested in the reference to the pulmonary findings in mitral stenosis. Our observations on a few such cases are that those lesions may be due to organization of macrophages filled with hemosiderin. It is possible to recognize benign pneumoconioses, particularly siderosis, by applying our knowledge of what goes on in the lung and interpret the film from that point of view. There are some differences. We have read correctly eleven out of twelve unidentified films as coming from welders. If one studies the shadows carefully, particularly in a film that is magnified, the shadows are not solid—they are ringlike. They have a tendency to undulate in an irregular linear fashion. Pulmonary siderosis causes an accentuation of the architecture of the lung in contrast to those pneumoconioses in which fibrous formation cause a displacement or replacement of lung tissue. In the latter there seems to be a solid formation, a solid nodule; in the former the pulmonary alveoli are accentuated by the deposit of iron, thus bringing out the spongy architecture of the lung.

THE MALE CLIMACTERIC

REPORT OF FIFTY-FOUR CASES

AUGUST A. WERNER, M.D.

Assistant Professor of Internal Medicine, St. Louis University
School of Medicine
ST. LOUIS

Both the human male and the human female have a pituitary-gonad relationship. In the girl at puberty the anterior pituitary gonadotropic hormone stimulates the ovaries to function, with the development of a graafian follicle and the production of an ovum. The granulosa cells lining the follicle produce estrogenic hormone, which in turn stimulates development of the breasts, the internal and external genitals and the configuration of the body, which changes from that of the girl, through adolescence to womanhood.

In the boy at puberty the anterior pituitary gonadotropic hormone stimulates the testicles to function. The interstitial cells of the testicles produce androgenic hormone, which causes development of the secondary sexual characteristics and initiates the changes that develop him from boyhood through adolescence to normal manhood.

The most obvious and fundamental difference which occurs as a result of this pituitary-gonad relationship in the human male and female is the fact that the normal woman menstruates.

Menstruation is the end result of a periodic preparation of the uterine mucosa to receive a fertilized egg. If pregnancy does not occur, hormonal interactions result in uterine bleeding. This periodic preparation of the uterine mucosa is necessary in the woman for propagation of the species and is obviously not necessary in the man.

The menstrual cycle may be looked on as an extra phenomenon in the woman and not as an occurrence necessary to her sense of well-being. If the uterus is removed and the ovaries are healthy and their function

The Roche-Organon, Inc., Nutley, N. J., supplied generous amounts of testosterone propionate (Neo-Hombreol).

Read before the Section on Miscellaneous Topics, Sessions for the General Practitioner, at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

is not disturbed, her pituitary-gonad relationship will continue as it does in the man and she can and will feel perfectly normal until the climacteric is reached.

It follows, then, that cessation of menstruation is not the climacteric and is not of such great importance as was formerly supposed. Cessation of menstruation is only visible evidence in the woman that there is beginning decrease or cessation of her ovarian function. The climacteric syndrome is the result of the endocrine imbalance and not the result of the menstrual disturbance.

As a result of the overemphasis which has been placed on the cessation of menstruation in the woman, and because the man does not have this phenomenon, it was believed that the man did not have a climacteric. There is absolutely no basis for the belief that the man does not have a decrease in sex function in later life and that he cannot have a climacteric. Probably a greater number of men than of women pass through the climacteric without any evident disturbance. However, this inference may be based on the fact that knowledge of the occurrence of this syndrome in man is of very recent date and that the condition possibly has been overlooked or ignored. The climacteric usually occurs later in men than in women. The average age of onset in women is about 40.8 years, and in men it occurs from approximately 45 to 55 years.

It is also a well established fact that neither the man nor the woman need be of climacteric age to develop typical climacteric symptoms. If a girl has her ovaries completely removed at 25 years of age she will have the typical syndrome; under similar circumstances the man will have these symptoms.

The endocrine imbalance in which the gonad hypofunction seems to be the chief factor, in conjunction with the anterior pituitary, disturbs the equilibrium of the two divisions of the autonomic nervous system with the resultant climacteric syndrome. These symptoms may vary from mild to extremely severe, in which latter instance the patient may develop climacteric psychosis (involutional melancholia).

In previous articles¹ the symptoms in the woman and in the man which accompany gonadal hypofunction or afunction, whether they are due to castration, insufficient gonad response or the climacteric, were outlined and described.

SUBJECTIVE SYMPTOMS

Since the climacteric is the result of a neuroendocrine imbalance, it is necessarily functional. The subjective symptoms accompanying gonadal hypofunction render the patient more uncomfortable than do the objective signs. As reported for the female, the symptoms in the male may be classified as (1) nervous. (2) circulatory and (3) general, as shown in the accompanying tables. A proper evaluation of the significance of these symptoms is the chief basis for a diagnosis. That these symptoms may be more easily recognizable, they will be described as they have been presented to me by a large number of patients of both sexes.

NERVOUS SYMPTOMS

All patients complained of an intense subjective nervousness or a feeling of tension. There is a sensation of an inward tremulousness, which usually does

not become manifest as a tremor. This is especially noticeable on arising during the night or in the morning. Excitement or fatigue accentuates it, and then a tremor may be noticeable, which should not be attributed to hyperthyroidism.

Nervous people are irritable and they are easily aggravated or excited to anger by word or deed. Noises of playing children, the radio, almost anything stirs them to action. In fact, they need no special stimulus. They are hard to please, and frequently the family or associates say that they can hardly get along with them. Many patients acknowledge this condition but state that they cannot help being so.

Excitability is a nervous state in which the persons respond to ordinary stimuli in an exaggerated manner, especially as regards the psychic response. Unfavorable news, slight mishaps, arguments, all manner of little occurrences that would not disturb a normal person cause quite a nervous and mental flurry.

A large majority of these patients complain of sleeping poorly. They may be restless, sleeping only for short intervals during the night. Some fall asleep quickly on retiring, only to awake within a half hour and remain awake for varying lengths of time. Others do not sleep on retiring until after midnight. Some complain that they sleep well until 2 or 3 a. m. and then remain awake until morning. Patients who do not sleep at night find themselves exhausted the next day and must sleep during the daytime. This desire to sleep during the daylight hours must not be confused with somnolence.

Numbness and tingling of the hands, feet or one or more of the extremities often occurs. Frequently these people awake while lying in bed and find the extremities completely numb. Some have stated that they had to sit up and rub their arms or legs, and one person awakened and arose to go to the bathroom and fell to the floor because the feet were numb. Formication, a sensation as if ants or insects were crawling over the skin, especially on the back and body, is frequently complained of. There may be itching, prickling or tingling of the skin.

Headaches of various types and location occur but are rarely migrainous. They may be described as a dull to severe ache, usually not neuralgic, and may occur irregularly or be continuous. Their location may be temporal, frontal, vertex or occipital, with any combination of these. There are two types of headaches which have almost specific diagnostic importance in gonadal hypofunction: vertex and occipitocervical. The occipitocervical ache may radiate to the neck, over the scapular regions or down the spine. It may last from hours to several days and, when present, the patients complain that their mind seems hazy or fogged, and this mental haziness may last for days. The vertex ache is frequently described, as if a great weight were resting on the head, or as a feeling of pressure.

There is decreased memory and ability for mental concentration. Cerebration is slowed, and they are forgetful, especially for recent events. If they read an article they cannot tell what they have read and must reread it several times before it registers; names, figures and dates are especially difficult to remember.

Depression or mild melancholia is an important symptom; when this is present the patients have loss of interest in their work, in their home or in their past pleasurable diversions; they want to avoid people and may cry for no special reason. They realize that there is something wrong within themselves, they

1. Werner, A. A.: Syndrome Accompanying Deficiency or Absence of the Ovarian Follicular Hormone, *Endocrinology* 19: 695 (Nov.-Dec.) 1935; The Male Climacteric, *J. A. M. A.* 112: 1441 (April 15) 1939; The Male Climacteric: Additional Observations of 37 Patients, *J. Urol.* 48: 872 (June) 1943; *Endocrinology: Clinical Application and Treatment*, Philadelphia, Lea & Febiger, 1943; Symptoms Accompanying Ovarian Hypofunction.²

become introverts and they are ill at ease, have fear of some impending danger and worry unnecessarily. One man worried and cried while at work because he thought that his wife might smoke cigarets while he was away. There is a loss of self confidence and a feeling of futility. At this stage of the condition these patients verge on psychosis, may be self accusatory, may have thoughts of self destruction and may actually commit the act. This extreme stage has previously been referred to as involuntal melancholia; it is a psychosis but of definite endocrine origin, as just described.

CIRCULATORY SYMPTOMS

Hot flushes are characterized by a sudden redness of the face and neck, upper chest and at times most of the body. This is akin to blushing and is due to dilatation of the superficial capillaries of the skin. It is a very uncomfortable sensation, generally of short duration, but it may last half an hour or even longer, if the statements of some patients are correct. Frequently this is described as a smothering sensation. Profuse perspiration may accompany the hot flushes. Chilly, creepy sensations occur at times, and these are the counterpart of hot flushes. There may be vertigo and scotomas or tingling or prickling sensations over the head, neck and body. Occasionally hot flushes may accompany disturbances of the cardiovascular system, especially arteriosclerosis with hypertension, but these conditions can be eliminated by proper diagnosis.

Tachycardia, palpitation and dyspnea, more than usual on moderate effort, without evident cardiorenal disease is complained of. Walking a short distance, ascending a flight of stairs, almost any moderate effort causes cardiac consciousness. Many of these patients have this group of symptoms occur while sitting quietly or even while lying in bed. At times they are awakened from their sleep by tachycardia and palpitation.

Vertigo, especially with change of position, is often noticed, with no cardiovascular condition to account for it. Vertigo, tinnitus and scotomas are usually associated symptoms; of these vertigo occurs most frequently. Scotomas may occur as dark, red or silvery specks floating or dancing before the eyes.

Cold hands and feet at any season are complained of by many of these patients. The pulse is usually not affected much unless there is some intercurrent condition, and the blood pressure may be increased in an occasional patient, perhaps the result of nervous tension.

GENERAL SYMPTOMS

Lassitude and fatigability are often present. Some of these people state that there is pronounced decrease of endurance, and they fatigue easily. Others complain that they are constantly tired or that on arising in the morning they are unrested or feel more tired than when they went to bed.

Vague pains are complained of, and their location may be as legion as the distribution of the nervous system. However, when a patient complains of pain, one must make a definite effort to determine its significance before it is lightly dismissed.

Potency is something apart from libido. Potency is more easily determinable in the male than in the female for obvious reasons. Libido in a large degree depends on the mental reaction and may be present in the absence of potency. I have had quite a few women state that libido was more pronounced during the menopause than at any other time in their life. This can be easily explained in both sexes because libido operates

through the conscious mind. In many instances the decline or loss of potency and the persistence of libido causes many men to consult the physician.

Constipation is frequently found in hypofunction of the thyroid and pituitary glands in which there is a relative vagotonia. Many of these patients complain of a gastric syndrome characterized by distention and eructation after meals with no organic lesions. This is probably secondary to the nervousness and the constipation and usually disappears with sedation and proper elimination. While some cases of constipation may have a glandular basis, the vast majority are probably due to improper habits, diets, gastrointestinal disease and other conditions.

STUDY OF FIFTY-FOUR PATIENTS

The symptoms that accompany the male climacteric are shown in the tables. It is well to remember the fact that these symptoms not only accompany the climacteric but may be present at any time in some individuals when there is much decrease or failure of gonadal function during active sexual life.

In this group of patients there were 2 having cryptorchidism and eunuchoidism, 3 having hypogonadism,

TABLE 1.—Frequency of Nervous Symptoms

	Per Cent
"	100.0
"	93.0
"	50.0
Depression.....	85.0
Crying.....	37.1
Decreased memory and concentration.....	79.8
Loss of interest and self confidence.....	61.1
Fear of impending danger, ill at ease and worry...	50.1
Desire to avoid crowds.....	22.2
"	24.1
"	3.7
"	27.7
"	20.4
Dysphagia.....	14.8
"	65.5
"	46.3
Headache.....	44.4
Itching.....	31.4
Formication.....	13.0

1 having surgical and postoperative testicular atrophy and another having testicular atrophy as a result of x-ray treatment, 44 in the male climacteric and 3 having climacteric psychosis. The age of these patients considered, as a whole, ranged from 41 to 64 years; the average age for the group when they first sought medical attention was 50.5, which is much later than the average age for the onset of climacteric symptoms (40.8 years) reported in 1931 in a study² of 197 women having ovarian hypofunction or afuction, 96 of whom were in the menopause.

Nine of these patients were single, 41 were married, 2 were widowers and 2 were divorced. The average height was 65½ inches (166 cm.) and the average weight was 155 pounds (70 Kg.). Obesity was strikingly less frequent in this group of men than in a similar group of women; only 8, or 14.8 per cent, were overweight, whereas 34 per cent of 197 women were obese. This paucity of obesity in men as compared to women may be due to several influencing factors, chief among which may be (1) that men are more active physically than women and (2) that women during the menacme, during each menstrual period and during and at the end of gestation are subjected to a tremendous glandular readjustment to which men are not sub-

2. Werner, A. A.: Symptoms Accompanying Ovarian Hypofunction, J. Missouri M. A. 28: 363 (Aug.) 1931.

jected; frequently in women this readjustment does not completely occur, with consequent menstrual disturbances and obesity.

The average pulse rate was 72 per minute; the average blood pressure was 129/83 mm. of mercury. The highest systolic pressure found in any individual was 190 and the lowest diastolic pressure was 65.

TABLE 2.—Frequency of Circulatory Symptoms

	Per Cent
Hot flushes.....	33.3
Chilly sensations.....	33.0
Sweating.....	27.7
Vertigo.....	44.4
Seotomas.....	33.0
Tinnitus.....	14.8
Numbness and tingling.....	57.4
Cold hands and feet.....	27.7
Tachycardia, palpitation and dyspnea.....	42.6
Pulse, average per minute.....	72
Blood pressure, average.....	129/83
Highest systolic, mm. of mercury.....	190
Lowest diastolic, mm. of mercury.....	65

The average basal metabolic rate was + 6 per cent in 5 patients, 0 per cent in 4 and — 17 per cent in 38. That this group of symptoms is not due to hypothyroidism is evidenced from the clinical experience of many observers, by the fact that patients having plus or minus metabolic rates have the symptoms and that they are not relieved by thyroid medication. Many of these symptoms when considered individually may accompany other conditions, but when a proper diagnostic survey fails to reveal any abnormality to account for them they must be evaluated from a functional point of view, especially endocrine.

Decrease or loss of potency was admitted by 90.8 per cent, and the remainder said "no."

Libido was decreased or absent in 45.4 per cent, 29.6 per cent answered "yes and no," and 14.8 per cent stated that it was unchanged. In 5 patients this information was not obtained.

Thirty-eight patients received intramuscular injections of 25 mg. of testosterone propionate every other day, omitting Sunday. Of these, no subsequent report was obtainable on 2; of the remaining 36, all were benefited by relief of symptoms and a sense of well-being.

REPORT OF CASES

So that the hypogonadal and climacteric syndrome in the male may be made more easily recognizable, the following type cases are described: (1) cryptorchism, bilateral, (2) castrate, (3) hypogonadism, (4) climacteric and (5) climacteric psychosis. All irrelevant and negative information will be omitted from the protocols for brevity.

The following is a case of bilateral cryptorchism with mild hypothyroidism:

CASE 1.—L. R., an unmarried man aged 52, showed intense subjective nervousness, depression and crying, decreased ability for mental concentration and memory for recent events, forgetfulness and severe occipitocervical aching, accompanied by mental haziness. The testicles had never descended and were not palpable in the inguinal canals. He was fatigued most of the time and arose in the morning unrested. Sleep was restless and he perspired much at night. Constipation was very troublesome. He began to gain weight rapidly at 27 years of age. He had never been severely ill and had not had any operations. His height was 70 inches (178 cm.) and his weight was 234 pounds (106 Kg.) nude. The skin over the entire body, face and extremities was sallow, pastylike and scaly. There was much adiposity over the trochanters, hips, suprapubic region and

the mammary areas, and only a sparse amount of pubic hair was present. The bodily configuration showed the effect of the lifelong deficiency of gonadal function; the general appearance was than of a eunuch instead of eunuchoidism. The pulse rate was 84 and the blood pressure was 165/120. The penis was 3 inches long, was small and had a long prepuce. The testicles were not palpable and the scrotum was small, flat and wrinkled. The prostate was not palpable because of failure to develop.

The hemoglobin, red and white cells and the blood picture were normal. The fasting blood sugar was 112 mg. The urine was normal.

The basal metabolic rate was — 15 per cent. The patient had taken 2 grains (0.13 Gm.) of desiccated thyroid for years, without any change in the condition described.

Twenty-five mg. of testosterone propionate in oil was injected intramuscularly every other day for three months. After three or four injections he began to feel better, and at the end of three weeks he was having many erections. The skin of the entire body changed from a pale sallow to a bright pink. The penis developed to 4 inches in length and 1 inch in diameter when flaccid. He stated that he felt "fine and vigorous."

The following patient was a castrate; one testicle was removed and the other atrophied from x-ray treatment:

CASE 2.—W. G., a man aged 40, married, had been operated on at 32 years of age, his right testicle being removed because of a suggestive nodule which it contained. Following this removal he received high voltage x-ray therapy eight times to the pelvic region and he stated that the left testicle was not protected. During the next two years the left testicle atrophied, and when he was examined it was small and soft.

As a result of the operation and atrophy there developed intense subjective nervousness, frequent hot flushes followed by profuse perspiration, depression and crying with decreased memory and ability for mental concentration; he could hardly remember anything. He stated that he had a feeling that he was losing his nerve and confidence in himself and that it was an effort for him to think and talk extemporaneously. He was

TABLE 3.—Frequency of General Symptoms and Signs

	Per Cent
Fatigability and lassitude.....	70.4
Potency decrease or loss, admitted.....	90.8
Libido:	
Loss.....	7.4
Decreased.....	33.0
Yes and no.....	29.6
No loss.....	14.8
No information on 5 patients.....	
Vague pains.....	22.2
Constipation.....	42.6
Obesity (moderate).....	10
Social status:	
Single.....	9
Married.....	41
Widower.....	2
Divorced.....	2
Height, average.....	65.5 inches
Weight, average.....	150.5 pounds
Age of climacteric patients.....	11 to 61 years
Average age.....	50.5 years
Basal metabolic rate (average).....	15 = +6% 4 = 0% 39 = -17%

ill at ease, felt anxious and had some unexplainable feeling that something would happen, without good reason.

He was exhausted most of the time, and it was an effort to work. There was a loss of interest in his usual activities. He had tachycardia, palpitation and dyspnea on light effort. He had occipitocervical aching most of the time, and this was becoming worse, with frontal aching just above the eyes. He also had some sacroiliac soreness, which was annoying. At times he slept well and then again he had periods of disturbed sleep. He had an erection and coitus about once every six weeks but usually was unable to complete the act. Most of these symptoms had been present since the x-ray therapy six years before.

His wife and 2 daughters were living and well. The family, personal and past histories as far as they related to his present condition were negative.

His height was 69 inches (175 cc.) and his weight was 173 pounds (78.5 Kg.) nude.

Physical examination revealed nothing abnormal, except that there was a long scar paralleling the right inguinal region. The right testicle was absent and the left was small and soft.

TABLE 4.—*The Male Climacteric Syndrome: Order of Frequency of Symptoms in Fifty-Four Patients*

	Per Cent
1. Nervousness, subjective.	100.0
2. Potency decrease or loss, admitted	99.8
3. Depression	85.0
4. Decreased memory and concentration	79.8
5. Libido, absent or decreased	75.0
6. Fatigability and lassitude	70.4
7. Sleep disturbed	65.5
8. Irritability	63.0
9. Loss of interest and self confidence	61.1
10. Numbness and tingling.	57.4
11.	50.0
12.	50.0
13.	46.3
14.	44.4
15. Vertigo.	44.4
16. Tachycardia, palpitation and dyspnea	42.6
17. Constipation.	42.6
18. Crying.	37.1
19. Hot flushes	35.7
20. Chilly sensations	35.0
21. Itching.	31.4
22. Sweating.	27.7
23. Feeling of futility.	27.7
24. Cold hands and feet	27.7
25. Scotomas	25.9
26. Personality change, unsociable	24.1
27. Desire to avoid crowds	22.2
28. Vague pains.	22.2
29. Thoughts of self destruction	20.4
30. Psychoses	14.8
31.	14.8
32.	13.0
33.	3.7
34. Suicide attempted, two persons	

The prostate was moderately decreased in size and showed increased firmness and was not tender. The prostatic fluid did not contain pus or spermatozoa.

The heart was normal, the action was regular, the pulse was 72 and the blood pressure was 120/75.

The blood and urine were normal for all the usual tests. The basal metabolic rate, two tests, was 0 per cent in each instance.

The diagnosis was castrate right side, testicular atrophy left side.

The patient was given 10 mg. of testosterone propionate, injected intramuscularly every other day, omitting Sunday. Two months later he reported that the symptoms were very much relieved and that a lumbosacral soreness, which he had had, had disappeared. He had been having erections twice a week. He had more energy, could work better and felt like taking active exercise.

With our present knowledge it would have been better to give this patient 25 mg. dosages instead of 10 mg.; the response would have been more rapid and satisfactory.

The following was a case of hypogonadism:

CASE 3.—W. S., a man aged 37, began his career as an office boy at 16 years of age and later became a salesman for the same firm, which position he held when he sought consultation.

For the past four years he had noticed decreased libido and potency. He had been very subjectively nervous and depressed, had become introverted and worried unnecessarily about himself. He was apprehensive, had decreased memory and concentration and loss of interest in his activities at home and in business and felt that he could not hold his position. He was ill at ease and had a fear of impending danger. He tired easily, and it required an effort to continue at his work; he tried to avoid company and became excited if he got into a group of people. He was subject to vertex headaches, vertigo with change of position and tinnitus. He had tachycardia and palpitation, even while lying in bed. There was numbness and

tingling of the extremities at times. He could not sleep after midnight and suffered from constipation. He had never been seriously ill and had had no operation.

He married at 20 years of age, and the wife and 2 children were living and well.

The family history was negative.

His height was 67½ inches (171 cm.) and his weight was 139 pounds (63 Kg.) nude. He was apparently normal physically, the heart seemed normal, the pulse rate was 66, lying down, and the blood pressure was 132/85.

The external genitals were normal, and the testicles had normal consistency.

The usual blood and urine tests were normal, and the basal metabolic rate was —7 per cent.

The diagnosis was hypogonadism, which could have been secondary to pituitary hypofunction or failure of the testes to respond normally to gonadotropic stimulation.

Twenty-five mg. of testosterone propionate was injected intramuscularly every other day, omitting Sunday. After two weeks he stated that he felt much better and slept soundly. At the end of one month he felt very well.

CASE 4.—H. K., a man aged 49½, married, a broker, had noticed himself "slipping" in several ways during the last eighteen months. He had decrease of libido and potency, which had been pronounced in the last two months. He was very nervous subjectively, irritable and excitable and at times felt like screaming. He was depressed and had a feeling of frustration, and he stated that he thought of suicide about six times. He had decreased memory and mental concentration and lost his train of thought while talking. He was ill at ease and had a feeling of some unexplainable danger. There was a loss of self confidence. He had occipital-cervical aching for almost one year, and his mind seemed hazy. He had vertex headache frequently and constant tinnitus for the last eighteen months. He also had a feeling as if he would faint if he turned his head to the left and had to snap it right back. Pressure on the carotid plexus did not elicit this symptom. He fatigued easily and was exhausted after a day's work. He slept poorly and lay awake for hours. He had tachycardia, palpitation and dyspnea on moderate effort, and this also occurred while he was lying quietly in bed. The hands and feet were cold, and there was numbness in both arms and generalized itching. He had hot flushes, especially when nervous, followed by profuse perspiration. At times he had felt as if a hot pad was applied to one or both thighs. He had distention and eructation after meals and felt as if there was a lump in his stomach.

His height was 66 inches (168 cm.) and weight 147 pounds (67 Kg.) nude. The hair was dry, but the skin had normal moisture. The heart was normal in size, the action was regular and there were no abnormal sounds. The pulse was 72 and the blood pressure was 120/75 mm. of mercury. The external genitals were normal and the testes had normal consistency. The prostate was about normal in size and slightly increased in consistency.

Examination of the blood and urine showed all tests to be within normal limits. The basal metabolic rate was minus 21 per cent on two tests.

He was given 25 mg. of testosterone propionate injected intramuscularly every other day, omitting Sunday. He was given 2 grains (0.13 Gm.) of thyroid daily.

After two weeks' treatment he stated that he felt very well and that libido and potency were increased. The treatment was continued for two months.

The following patient had climacteric psychosis (male involutional melancholia):

CASE 5.—A man aged 58, married, became depressed about eighteen months before he came under observation and had decreased memory and concentration and loss of interest in his work and other activities. He was fatigued and had numbness and tingling of the extremities, even while lying in bed.

His condition became gradually worse. He could not work, seemed terribly worried, did not want to see any one and would not talk but would hold the newspaper in his hand for long periods without turning a page or would stare out of a window with a blank expression.

At that time he attempted suicide by inhaling gas and was taken to a sanatorium, where he remained for several months without improvement.

He was then given 25 mg. intramuscular injections of testosterone propionate every other day. Within two weeks he made decided improvement and stated that he felt "very fine." He also stated that he had accentuated sexual stimulation, which had been absent for two years; this statement was corroborated by his wife. After one month of this treatment he was cheerful but very talkative and wanted to go to work. At the end of the second month he was allowed to resume his work and got along nicely.

COMMENT

This report represents a study of 54 male patients, each of whom had one of the types of testicular hypofunction or afunction, which is, or can be, the etiologic factor in producing the hypogonadal or climacteric syndrome. With the exception of menstruation in the female, it is the same for the two sexes.

The symptoms have been discussed, so that the syndrome may be easily recognizable.

Testosterone propionate, by intramuscular injection of 25 mg. three times a week, has been found effective in relieving the symptoms and in the production of a sense of well-being in the patients, which is the primary objective of this treatment. This medication should be administered for two or three months. The patient may feel very well within a few weeks, but it is best to continue beyond this time for the purpose of stabilization. Testosterone may also be given orally, by inunction and by implantation. The effective oral dosage is three to eight times greater than by intramuscular injection. Inunction of testosterone is not so satisfactory. By implantation, one has no control of dosage.

Testosterone should not be given for the purpose of stimulating potency. While it occurs in some patients, this result cannot be promised and it is perhaps better for older men if this phase of the reaction does not result.

It is important that the duration of the climacteric be stressed, since it varies in different individuals. Some pass through this without much appreciable difficulty; some may have trouble for three to six months, and in others the period for permanent endocrine equilibrium to occur may be from one to four or five years. The latter group will need intermittent treatment for one to three months when aggravating symptoms recur.

403 Humboldt Building. _____

ABSTRACT OF DISCUSSION

DR. CHARLES W. DUNN, Philadelphia: The constitutional attributes of testosterone supersede its sexual stimulatory powers. This can be established in any male castrated or castrate. The administration of estrogen to a male castrate suppresses the flashes and drenching sweats and relieves the other vasomotor reactions but does not relieve the energy deficit or establish the sense of well being. Only male hormone therapy accomplishes both therapeutic responses in the male castrate. When testosterone is administered to male hormone deficiency patients in dosage proportionate to their deficiency—including the climacteric—the initial therapeutic response is constitutional. The male climacteric is a deficiency state of the body and must be so treated and corrected if it is desired to obtain symptomatic control. Dr. Werner stated that 2 of his patients attempted suicide; 4 of my patients attempted suicide, and 1 succeeded. The male climacteric is an important syndrome because it occurs chiefly in men with important responsibilities, men who require

sustained energy, physical and mental, throughout the day to perform competently their assigned responsibilities. The progressive loss of physical and mental energy which the male climacteric experiences is the substratum on which major mental symptoms develop and precipitate the inferiority and inadequacy complex. The male climacteric requires therapy and adequate therapy. The dosage varies with the duration of the disturbance, the type of symptoms, their extent and their intensity. The initial dose should be maximal, 25 to 50 mg. two or three times a week for from two to four weeks. As the constitutional responses, disregarding sexual, are obtained the dose is reduced. The true climacteric patient is more concerned with constitutional rehabilitation than he is with sexual stimulation. Occasionally full testosterone therapy does not relieve the headache and suboccipital pressure pain. The administration of 6,000 rat units of estradiol benzoate every fourth day in combination with the testosterone for two or three doses relieves the symptoms.

DR. BENJAMIN F. SIEVE, Boston: Dr. Werner and his associates have emphasized that the cessation of menstruation in the woman is a side phenomenon that necessarily must occur at this time. However, in my experience the climacteric syndrome may precede by years the cessation of menstruation. Therefore one has to define and diagnose rather obscure symptoms to determine the onset of the climacteric syndrome in both the female and the male. In the female the cessation of menstruation is solely the indication of the termination of the reproductive period. I agree with Dr. Werner in that the male climacteric syndrome is a clinical entity which we are now able to diagnose and correct. In my experience the average age of onset is in the early forties. Many cases are seen early, in the third decade of life. Since external influences, particularly on the nervous system, seem to precipitate the onset of the syndrome, it is most likely that as a consequence of the war with all its ramifications many more early cases will be seen from now on. Aside from the androgens, the estrogens have also an important role in the therapy of the male syndrome. The role of the vitamin B complex therapy in the female and male syndrome is not fully understood at present. It seems that the vitamin B complex enhances the synthesis of the hormones.

DR. AUGUST A. WERNER, St. Louis: Fatigue and lassitude are symptoms common to hypothyroidism, but they are also common to the climacteric syndrome, without hypothyroidism, and they disappear on treatment with testosterone and without thyroid medication. It is known that the male and female secrete both estrogenic and androgenic hormones, but in the female the estrogenic hormone preponderates and in the male the androgenic hormone is in the ascendancy. I can see no reason for complicating the treatment of these conditions in the man or the woman. One cannot go far wrong by using nature's method, by giving the woman estrogens and the man androgens. However, there is one caution to be observed in giving the man androgens, and that is the condition of his prostate. If the prostate is large or is giving some trouble, estrogens are indicated. This is one example of where good medical and clinical knowledge and intelligence are needed. No potent drugs should be purchased over the drug counter for self medication. Dr. Sieve spoke about these symptoms occurring in the third decade. This syndrome can occur during any period of active sexual life, from puberty to the postclimacteric. If a young girl has her ovaries removed she will be disturbed by glandular-autonomic nervous system imbalance, irregularly, until past the time for the natural menopause to occur. Also if a girl begins to menstruate at the age of 14 years and to the age of 20 her menstruation is of four to five days' duration and the flow is good, and then she begins to flow less or scantily she will develop the climacteric symptoms even though she has cyclic bleeding. She is not in the menopause, but she has ovarian hypofunction from one of the various causes. The menstrual disturbance is only evidence of the glandular imbalance, and the glandular autonomic system imbalance causes the symptoms. Similarly, while the male does not have the visible evidence of gonad hypofunction that the female has, if his gonads hypofunction he develops the same glandular-autonomic imbalance and the characteristic symptoms.

Clinical Notes, Suggestions and New Instruments

BULLOUS DERMATITIS (DERMATITIS MEDICAMENTOSA) FROM PENICILLIN

GEORGE E. MORRIS, M.D.,
AND
JOHN G. DOWNING, M.D.
BOSTON

Reactions from penicillin may be due to the drug itself or they may arise from toxic impurities contained in individual batches of the extract. Those due to impurities were more frequent before technical developments in culture and extraction produced purer products. Such reactions included chills, fever, headache, faintness, flushing of the face, eosinophilia and other pathologic conditions.¹ Urticaria,² fever, thrombophlebitis,³ gastrointestinal reactions,⁴ contact dermatitis⁵ and vesicular dermatitis⁶ have been reported as toxic manifestations to the penicillin itself. To our knowledge, bullous dermatitis (dermatitis medicamentosa) has not been previously reported from the drug.

R. A., a man aged 56, seen at the Brooks Hospital by J. G. Downing on May 25, 1944, had received 1,000,000 units of penicillin for a postoperative infection. Four days after the



Bullous dermatitis (dermatitis medicamentosa) due to penicillin.

last injection the patient had noted itching of the left hand and arm, and twenty-four hours later erythema and edema of the left hand, arm and left side of the body appeared.

On the sixth postinjection day there was tense pitting edema of the entire hand and forearm. These parts also showed erythema and multiple ruptured and unruptured bullae, filled with clear, thin, yellow fluid.

The left side of the face and trunk showed multiple wheals of various sizes.

The dermatitis persisted for four to five days and disappeared under bland therapy.

520 Commonwealth Avenue, Boston 15.

From the Department of Dermatology and Syphilology, Tufts College Medical School.

1. Lyons, Champ: Penicillin Therapy of Surgical Infections in the U. S. Army, J. A. M. A. 123: 1007 (Dec. 18) 1943.

2. Keefer, Chester S.; Blake, F. G.; Marshall, E. K.; Lockwood, J. S., and Wood, W. B.: Penicillin in the Treatment of Infections, J. A. M. A. 122: 1217 (Aug. 28) 1943.

3. Progress with Penicillin, editorial, Lancet 2: 546 (Oct. 30) 1943.

4. Moore, J. E., Mahoney, J. F.; Schwartz, W. H.; Sternberg, C. T., and Wood, W. B.: The Treatment of Early Syphilis with Penicillin, J. A. M. A. 126: 67 (Sept. 9) 1944. Stokes, J. H., Sternberg, C. T.; Schwartz, W. H.; Mahoney, J. F.; Moore, J. E., and Wood, W. B.: The Action of Penicillin in Late Syphilis, *ibid* 126: 73 (Sept. 9) 1944.

5. Pyle, H. D., and Rattner, H.: Contact Dermatitis from Penicillin, J. A. M. A. 125: 903 (July 29) 1944. Binkley, G. W., and Brockmole, A.: Dermatitis from Penicillin, Arch. Dermat. & Syph. 50: 326 (Nov.) 1944.

6. Graves, W. N.; Carpenter, C. C., and Unangst, R. W.: Recurrent Vesicular Eruptions Appearing During Administration of Penicillin, Arch. Dermat. & Syph. 50: 6 (July) 1944.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., Secretary.

PENICILLIN (See Supplement to New and Nonofficial Remedies, 1944, p. 18).

The following dosage forms have been accepted:

CHEPLIN LABORATORIES, INC., SYRACUSE, N. Y.

Penicillin Sodium Salt: 20 cc. vials containing 100,000 Oxford units.

HEYDEN CHEMICAL CO., NEW YORK

Penicillin Sodium: 100,000 Oxford units.

ELI LILLY & CO., INDIANAPOLIS

Penicillin (Sodium Salt): Ampuls of 100,000 Oxford units.

WYETH INCORPORATED, PHILADELPHIA

Penicillin Sodium: Vials of 100,000 Oxford units.

Penicillin Calcium: Vials of 100,000 Oxford units.

BENZESTROL—Nonproprietary designation for 2,4-di-(*p*-hydroxyphenyl)-3-ethyl hexane, formerly known as Octofollin (see THE JOURNAL, March 4, 1944, p. 647).

The following dosage forms have been accepted:

LEDERLE LABORATORIES, PEARL RIVER, N. Y.

Solution Benzestrol (in Sesame Oil) 5 mg. per cc.: 2 cc. vials. Preserved with 0.5 per cent chlorobutanol.

Tablets Benzestrol: 2 mg. and 5 mg.

DIPHTHERIA TOXOID, TETANUS TOXOID, ALUM PRECIPITATED, COMBINED (See New and Nonofficial Remedies, 1944, p. 563).

The following dosage form has been accepted:

PARKE, DAVIS & CO., DETROIT

Diphtheria Tetanus Toxoid (Combined) Alum Precipitated: 1 cc. vial. Preserved with 0.01 per cent merthiolate.

SULFADIAZINE (See New and Nonofficial Remedies, 1944, p. 178).

The following dosage forms have been accepted:

BUFFINGTON'S, INC., WORCESTER, MASS.

Tablets Sulfadiazine: 0.5 Gm.

CARROLL DUNHAM SMITH PHARMACAL CO., ORANGE, N. J.

Sulfadiazine Tablets: 0.5 Gm.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1944, p. 191).

The following dosage form has been accepted:

CARROLL DUNHAM SMITH PHARMACAL CO., ORANGE, N. J.

Tablets Sulfathiazole: 0.5 Gm.

SULFAPYRIDINE (See New and Nonofficial Remedies, 1944, p. 188).

The following dosage form has been accepted:

CARROLL DUNHAM SMITH PHARMACAL CO., ORANGE, N. J.

Tablets Sulfapyridine: 0.5 Gm.

SULFANILAMIDE (See New and Nonofficial Remedies, 1944, p. 184).

The following dosage form has been accepted:

CARROLL DUNHAM SMITH PHARMACAL CO., ORANGE, N. J.

Tablets Sulfanilamide: 0.32 Gm.

SULFAMERAZINE (See Supplement to New and Nonofficial Remedies, 1944, p. 10).

The following dosage form has been accepted:

ELI LILLY & CO., INDIANAPOLIS

Tablets Sulfamerazine: 0.5 Gm.

THE JOURNAL OF THE
AMERICAN MEDICAL ASSOCIATION

585 NORTH DEARBORN STREET - - CHICAGO 10, ILL.

Cable Address - - - "Medic, Chicago"

Subscription price - - - - Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, MARCH 24, 1945

SANITARY DANGERS OF CROSS
CONNECTIONS IN PLUMBING

Sanitary engineering practice has recognized for many years the hazards attached to the current operation of public water supply systems. The design and construction of an integrated public water supply system guarantee only the essentials of good hydraulic and sanitary practice. After the completion of the system, however, many problems arise because of the nature of the liquid handled and of the physical laws governing its distribution. The system operates under varying conditions of starting and stopping and with thousands of exposures through plumbing installations attached for maximum public, private and industrial uses. These innumerable outlets and interconnections are essential not only for potable water use but for many of the sanitary equipments operated in a water carriage system. No matter how well conceived a water supply system may be, physical relation to nonpotable liquids may result from many of the uses in a modern community. Control of these many collateral uses is one of the most difficult functions of public service. Rarely does a comprehensive system prevent or eliminate the many cross and back siphonage connections which are in existence or which may be continually made.

The Chicago amebic dysentery epidemic in 1933 dramatized the problems attached to the consistent delivery of safe water. This epidemic emphasized the thinness of the dividing line between safety and danger where water supply is exposed to sewage contamination at the points of consumer use. Before and after that nationwide epidemic, sanitary engineers have been confronted with hundreds of epidemics of similar nature. Some indication of the widespread existence of cross connection and back siphonage hazards may be obtained from the accompanying summary of distinct violations of sanitary principles for the protection of water supply lines, as they appear from the records of one large port city. The conditions were found in the 1942-1943 period.

These conditions can be matched in virtually every city in this country. The cross connections are not usually the result of carelessness or poor design but are generally made for stand-by fire protection, for industrial water use, for pump priming or for auxiliary boiler feed.

Reports and recommendations on the subject have been prepared by the American Water Works Association, the New England Water Works Association, the Conference of State Sanitary Engineers and other interested groups. In a comprehensive review¹ of a seven year period ended in 1936 in the United States, Wolman and Gorman state that of 170 reported water borne outbreaks 14 were due to cross connections with a polluted water supply. A preliminary tabulation of disease outbreaks conveyed through water in the United States in 1942, as reported to the U. S. Public Health Service by state and territorial health authorities, indicates that 8 of 50 reported water borne outbreaks were due to cross connections with a polluted water supply.

Violation of Sanitary Principles for Protection of
Water Supply

Number of industrial plants and military establishments.....	319
Cross connections with nonpotable water supplies.....	331
Process water connections.....	2,861
Sewer connections (to water supplies).....	627
Back siphonage connections with plumbing systems.....	6,777
Back siphonage connections (miscellaneous).....	3,365
Pierhead connections (unequipped with protective devices).....	1,115
Total	15,076

Although great progress has been made in eliminating cross connections in the past two or more decades, many thousands of them unquestionably have been broken through cooperative action and through passage and enforcement of cross connection regulations. Some of these regulations have been adopted by many states. Numerous local water and health departments (e. g. Los Angeles) have also adopted rules and regulations. Enforcement often falls far behind the establishment of control procedures. State health agencies usually do not have the personnel to carry out the detailed and continuous follow-up necessary. Local water or health agencies may shirk their responsibilities and fail to carry out the necessary detailed surveys and subsequent reappraisals of conditions. Finally, it must be conceded that, even with conscientious attempted supervision, new cross connections or concealed connections may give trouble.

Back siphonage connections between potable water supply lines and plumbing systems may actually admit sewage to water lines under certain hydraulic conditions. In hospitals, equipment may be used with submerged inlets and connections so installed that infectious or poisonous materials may be back siphoned into the

1. Annual Year Book, A. P. H. A. 20, No. 2; J. A. W. W. A. February, 1940.

potable water supply pipes. Submerged inlets to factory process tanks holding poisonous solutions may result in contamination of the potable water supply, should back siphonage occur. Opportunities for sabotage may exist because of backflow of dangerous solutions in industrial plants.

During the war all of these hazards have unquestionably been increased by the large and rapid expansion in industry and in land and sea transportation. Breakdown in supervision by local, state and federal agencies has been too common. Many of the principles and standards regulating practice in this field were being abrogated in one direction or another during wartime. Such accidents became so frequent both on land and on sea that prompt review of the entire situation was essential in order to eliminate the detectable hazards and to prevent future disabilities. With this objective in mind the Committee on Sanitary Engineering² of the Division of Medical Sciences, National Research Council, created a Temporary Subcommittee³ on Cross Connections to review the rules and regulations promulgated by military, semimilitary and civilian agencies, to recommend modifications in policies and in practice and to make those conclusions and recommendations available to the country at large for application by military and civilian medical officers of health and engineers. This report has now been released by the Committee on Sanitary Engineering, with the approval of the National Research Council and the Surgeons General of the Army, the Navy and the U. S. Public Health Service. Exact figures of the number of persons made sick or exposed to disease outbreak during the last two years are missing in many instances. A review by the committee, however, indicates that at least some 100,000 persons have become ill.

One of the special problems to which the committee directs attention is pierhead connections installed to supply vessels with potable water for drinking or for fire fighting. These provide a ready method of polluting the potable water through the use of auxiliary fire pumps for nonpotable water. In one port city the number of these pierhead connections aggregates 15,000, and protective devices were necessary on some 2,500. The report represents a number of methods of prevention of backflow into potable water systems. All of them are adjusted to the availability of wartime materials and to the increased necessities for physical protection as a necessary supplement to personal supervision. The report should be read by every medical officer of health, every sanitary engineer and every waterworks official engaged in the protection of the potable water supply. Many officials even at this late date are not yet aware of the significance of these concealed hazards.

² The members of the Sanitary Engineering Committee are Harold E. Blahutt, F. C. Bishop, V. M. Ehlers, Gordon M. Fair, Kenneth F. Maxey, H. A. Whittaker and Abel Wolman, chairman.

³ The members of the Temporary Subcommittee on Cross Connections are E. Sherman Chase, Joel I. Connolly, Francis M. Dawson, Raymond T. Gouley, Sol Pincus and Warren J. Scott, chairman.

RETARDATION OF BONE GROWTH

The problem of equalization of the length of the legs arises in children and in young adults as the result of the healing of overriding fractures, injuries to the adjacent epiphysis from joint or bone infection, bone tumors and congenital deformities. In many cases unequal length occurs as a residual effect of paralysis of muscle groups attendant on anterior poliomyelitis. The methods employed for equalization of length consist in lengthening the short limb,¹ shortening the long limb,² arresting the bone growth of the longer extremity by destroying the epiphyseal cartilaginous plate³ and stimulating bone growth of the shorter limb by lumbar sympathectomy⁴ or by direct irritation of the epiphyseal cartilaginous plate.

In a series of experiments on dogs, in which an attempt was made to stimulate bone growth by inserting two different kinds of metal into and around the epiphyseal plate, Haas⁵ observed that in 1 animal in which a free wire loop was placed around the epiphyseal plate in the frontal plane the wire loop opened as growth took place and the epiphysis grew distally. Comparison of the two extremities at the conclusion of the experiment indicated that there was a loss of growth in the limb with the wire loop. Haas repeated the experiment on a number of dogs and became convinced that longitudinal growth of bone could be mechanically hindered by passing a wire loop around the epiphyseal plate to bind the epiphysis to the diaphysis. The method was employed in treating 2 patients with discrepancy in the length of the legs resulting from poliomyelitis. A stainless steel wire was passed through the epiphysis and the ends were turned proximally. A similar wire was passed through the metaphysis and the ends were turned distally. The two wires were then hooked together under tension. From March 4, 1941 to July 12, 1944 there had been 1.3 cm. more growth on the short than on the normal side. The operation was performed on 5 patients.

Haas points out that determination of the practicality of this method to control bone growth must await the results obtained after a long period, since growth is relatively slow in man. However, growth of bone can be controlled by alternately releasing or tying the wire loops. The method presents a theoretical advantage over resection of the epiphyseal plate because its effect is only temporary.

¹ Abbot, L. C. The Operative Lengthening of the Tibia and Fibula. *J. Bone & Joint Surg.* 9: 128 (Jan.) 1927.

² White, J. W., and Warner, W. P. Experiences with Metaphyseal Growth Arrests. *South. M. J.* 31: 411 (April) 1938.

³ Phemister, D. B. Operative Arrestment of Longitudinal Growth of Bones in the Treatment of Deformities. *J. Bone & Joint Surg.* 15: 1 (Jan.) 1933.

⁴ Harris, R. L., and McDonald, J. L. The Effect of Lumbar Sympathectomy on the Growth of Legs Paralyzed by Anterior Poliomyelitis. *J. Bone & Joint Surg.* 18: 35 (Jan.) 1936.

⁵ Haas, S. L. Retardation of Bone Growth by a Wire Loop. *J. Bone & Joint Surg.* 27: 25 (Jan.) 1945.

ADENOSINE TRIPHOSPHATE

Investigators of intermediary metabolism have shown that the apparently simple combustion of carbohydrate in the body is in reality a complex phenomenon. Much of the newer knowledge has been secured by using thin slices of living tissue as the metabolizing system. Then a still simpler scheme involved the use of purified enzymes, so that the steps of the reactions could be examined in detail. As a result the classic Embden-Meyerhof-Parnas mechanism for the utilization of carbohydrate by tissues was evolved. In comparing the various suggested outlines, it is obvious that phosphate plays an important role in the combustion of glucose; either the esterification of the carbohydrate with phosphoric acid or the hydrolysis of such esters is involved in many of the reactions. Some of these esters possess large amounts of energy which is available in metabolism; such phosphorus linkages have been called the "high energy phosphorus bond" by Lipmann.¹ Adenosine triphosphate possesses a high energy bond which is lost in the course of the phosphorylation of glucose prior to its enzymatic conversion to glycogen or its oxidation for muscular energy and heat. The regeneration of the adenosine triphosphate appears to be associated with the aerobic oxidation of pyruvic acid.

Experimental support for the foregoing view is afforded by the results of studies by Kaplan and Greenberg,² who observed that the adenosine triphosphate in the liver is decreased on dietary regimens in which impairment of glucose tolerance might be expected. Thus in rats a high fat ration or inanition produces not only a diabetic type of glucose tolerance curve but also a reduction of adenosine triphosphate in the liver. Injection of glucose, however, increases the hepatic adenosine triphosphate, which is to be expected, as aerobic oxidation of glucose is coupled with the regeneration of energy rich phosphate compounds.

Insulin increases the adenosine triphosphate in the liver even if the animals are consuming a high fat diet, possibly through the aerobic oxidation of pyruvic acid. This augmentation of oxidation of pyruvate may be the fundamental point of action of insulin in carbohydrate metabolism, for it is known that both in vitro synthesis of glycogen and the enzymatic degradation of glucose can occur without the intervention of insulin or other hormones. The foregoing observations on the significance of phosphorus in the metabolism of carbohydrate are of added interest because of the suggested mode of action of insulin. The present clinical significance of this hormone justifies continued investigation of the details of its behavior in metabolism.

1. Lipmann, Fritz: *Advances Enzymol.* **1**: 99, 1941.
2. Kaplan, N. O., and Greenberg, D. M.: *J. Biol. Chem.* **156**: 525, 533, 559 (Dec.) 1944.

Current Comment

NODULAR PERINEURITIS AND POLYMYOSITIS IN RHEUMATOID ARTHRITIS

Freund and his co-workers¹ in Detroit described distinctive inflammatory nodules in the perineurium of peripheral nerves in rheumatoid arthritis. Such lesions may occur in nerves more or less remote from affected joints as well as in nerves not connected with joints. In a study of the nerves in the amputated legs of a 27 year old woman suffering from rheumatoid arthritis, nodular lesions of a similar nature were found² also in large numbers in the skeletal muscles. The lesions varied in size from microscopic to visible by the naked eye on stained sections of muscle. They were made up of lymphocytes, relatively few plasma cells and occasional epithelioid and eosinophilic cells, but giant cells or necrotic centers were not found. In some nodules on nerves there was a central necrosis. Such nodules were found also in biopsies of muscle in 14 cases of rheumatoid arthritis but not in any of many control examinations. The exact relation of the muscle lesions to small blood vessels or to nerves has not been determined. The muscle fibers themselves presented irregularly distributed degenerative and atrophic changes. The Detroit investigators regard these nervous and muscular lesions as specific and as indicative of the systemic nature of rheumatoid arthritis. The joint involvement is associated with a widespread nodular lymphocytic inflammation in peripheral nerves and skeletal muscles, which serves to explain the pain, tenderness and trophic changes of the disease at the same time as it presents a new point for investigative attack on the problems of etiology. Whether the neural and muscular nodules contain the causative agent is a question which invites experimental investigation.

PENICILLIN RESISTANCE

Strains of bacteria resistant to penicillin may be obtained experimentally by growing bacteria on mediums containing increasingly higher concentrations of the drug. Experiments by Demerec¹ indicate that the resistance of a strain of *Staphylococcus aureus* to certain concentrations of penicillin is not due to an interaction of penicillin on the bacteria but rather that it arises independently in the bacteria by mutation. In any large population of bacteria of the staphylococcus strain used there is some individual resistance to certain low concentrations of penicillin. The nonresistant organisms are eliminated, while the more resistant survive. Penicillin acts as a selective agent but it does not itself increase the resistance of the survivors. Resistance is a complex characteristic of the bacteria which involves a number of mutations and a multiplicity of genic changes.

1. Freund, H. A.; Steiner, Gabriel; Leichtentritt, Bruno, and Price, A. E.: *Peripheral Nerves in Chronic Atrophic Arthritis*, *J. Lab. & Clin. Med.* **27**: 1256 (July) 1942; *Am. J. Path.* **18**: 865 (Sep.) 1942.
2. Freund, H. A.; Steiner, Gabriel; Leichtentritt, Bruno, and Price, A. E.: *Nodular Polymyositis in Rheumatoid Arthritis*, *Science* **101**: 202 (Feb. 23) 1945.

1. Demerec, M.: *Production of Staphylococcus Strains Resistant to Various Concentrations of Penicillin*, *Proc. Nat. Acad. Sc.* **31**: 16 (Jan.) 1945.

MEDICINE AND THE WAR

ARMY

THE ARMY'S RECONDITIONING PROGRAM

Soldiers recovering from battle wounds are making up credits toward obtaining high school and college diplomas while in convalescent hospitals, as part of the Army's reconditioning program. The curriculum offered by the program includes music, printing, automotive mechanics, business and army administration, electricity, photography, carpentry, pattern making, watch repairing, metal working, lettering and sign writing, welding, canvas and leather working and drafting. Patients are not held in army hospitals to complete any course of study. When they have reached the maximum benefit of hospitalization they are returned to duty.

Wounded soldiers, now being evacuated from overseas at the rate of more than 33,000 a month, first are sent to one of sixty-four general hospitals best suited for the special type of treatment required. When a patient has recovered sufficiently and no longer requires daily ward care, he is removed to a convalescent hospital.

A. A. F. RHEUMATIC FEVER CONTROL PROGRAM

The second conference of the A. A. F. Rheumatic Fever Control Program was recently held at the A. A. F. Regional Hospital of the San Antonio Aviation Cadet Center. The conference was attended by more than 150 medical officers representing all branches of the armed forces. Symposia on rheumatic fever, respiratory disease and air borne infections were presented. The following are the major recommendations of the various committees which met during the conference:

Committee on Sulfonamide Prophylaxis: This measure should be used cautiously and only after other measures to control respiratory disease have been utilized to the full.

Committee on Streptococcus Grouping and Typing: Methods were standardized in all laboratories for this procedure. There are now sixteen special streptococcus laboratories in A. A. F. regional hospitals.

Committee on Treatment of Upper Respiratory Infection: Further well controlled studies with sulfonamides and penicillin are advisable before any therapeutic recommendations can be made.

Committee on Salicylate Therapy: Studies were outlined for the use of salicylates prophylactically and therapeutically. It was recommended that intravenous salicylates are unnecessary, as satisfactory blood levels are obtainable by oral therapy.

Committee on Convalescent Care: Studies of physical fitness and attempts to determine the termination of active rheumatic infection should be continued.

A DISTINGUISHED MEDICAL DETACHMENT

An enviable record has been made by the medical detachment of the 16th Infantry Regiment of the 1st Infantry Division, which has been in action since it landed at Oran, Algeria, Nov. 8, 1942. It has also participated in the Tunisian, Sicilian, Normandy, French, Belgian and German campaigns, participating in the D day landings at Oran, Sicily and Normandy. In the latter landing operation the regiment was awarded the Presidential Distinguished Unit Badge. Officers and men of this medical detachment have to date been awarded 4 Distinguished Service Crosses, 90 Silver Stars, 1 Legion of Merit, 128 Bronze Stars and 159 Purple Hearts. Major Charles E. Tegtmeyer of Hamilton, N. Y., is in command of the unit and is the recipient of each of the five awards mentioned. The men of the unit take pride not only in the excellence of their first aid work but also in their ability to evacuate the seriously wounded expeditiously under fire.

CASUALTIES FROM OVERSEAS

In a recent announcement the War Department stated that army general and convalescent hospitals in this country are caring for more than 50,000 more sick and wounded soldiers than was the case three months ago. The number of patients had jumped from around 87,000 last October to 140,000 by the end of January and is steadily increasing. According to the Office of the Surgeon General each of these men will be sent to an army general hospital where there is a specialized treatment center for his particular type of injury or illness. These "centers" are staffed with specialists in plastic surgery, tropical diseases and other specialized fields. They are also equipped with the finest treatment facilities.

Brig. Gen. Raymond W. Bliss, Assistant Surgeon General, stated that the present expansion of general hospitals by 70,000 beds was being rapidly accomplished through the conversion of existing general hospitals rather than through the construction of new wards. At many of the general hospitals, he said, there are well constructed barracks, built with an eye to the future, which were used to house overseas hospital units during their training period. The barracks are now being turned into wards for patients. Permanent barracks, built to house the hospital staff, are also being converted into wards, and these are being replaced with temporary barracks, which can be quickly constructed.

The number of bed patients who can be cared for in army general hospitals has been further increased by the establishment of more convalescent centers where patients are sent as soon as they are up and about. There are now eleven of these where soldier patients are being reconditioned in a pleasant club-campus atmosphere for return to duty or to civilian life.

This reconditioning program keeps the men active physically and mentally during their convalescence. It has recently been expanded to include vocational guidance and a wider variety of technical, business and art courses which enable the men to develop new interests and skills while they are still patients.

DESIGN NEW DRESS FOR WAC HOSPITAL TECHNICIANS

The Army Quartermaster Corps has developed and is now procuring a new, short sleeved dress of rose beige cotton print resembling chambray for members of the Women's Army Corps who receive special medical and surgical technician training and are assigned as technician aides to army medical officers and nurses. The new dress for Wacs in hospitals, which will replace the present blue cotton-crepe uniform, is tailored in one piece, fastens down the front with buttons to match its color and has a buttoned belt. The insignia are worn on the collar, the U. S. on the right and the caduceus on the left tab. Each enlisted WAC technician will be issued nine of these easily laundered dresses. They are for wear only while on duty in the hospital and will not be worn by officers.

CHANGE DDT SPECIFICATIONS

The War Department recently announced that specifications of DDT spray, developed by the Quartermaster Corps to control roaches, flies, mosquitoes, bedbugs, ants and other insects, have been changed to eliminate the tendency of the spray to crystallize at low temperatures. The spray, which is a saturated solution of DDT in kerosene, crystallized to some extent when held in unheated storage. By adding 15 per cent of a special methylated naphthalene to the kerosene a solution showing no crystallization at temperatures as low as 20 degrees below zero was obtained.

RECONDITIONING THE MIND SPEEDS SOLDIER CONVALESCENCE

According to Col. Augustus Thorndike, director of the Reconditioning Consultants Division, Office of the Surgeon General, reconditioning the mind, supplementing reconditioning the body, is the newest ally to obtain rapid convalescence. Major W. S. Briscoe, who is in charge of the program, stated that the task of the educational reconditioning program is to return the soldier, either to active army service or to civilian life, mentally alert. Under this program mental activities gradually increase as the soldier's needs for physical reconditioning from his injury taper off. Class 4 patients (confined to bed) have at first merely simple entertaining types of activity that will help them overcome and forget their anxieties about their injury and their future. As they become class 3 patients (up and about but still confined to hospital wards) their mental reconditioning program is stepped up. Men who wish to continue their formal education—stopped by their induction into the Army—are encouraged to take correspondence courses from the United States Armed Forces Institute at Madison, Wis. When the casualty reaches the status of a class 2 patient and no longer needs medical care in a ward, he is given a uniform and becomes a "trainee." He leaves the hospital and is assigned to a reconditioning center, where he lives in army barracks and begins the task of fitting himself for either active or limited duty, according to his disability. Finally, as a class 1 convalescent the soldier patient finds his physical and educational reconditioning increased. He takes drill and other military subjects, and he relearns some of the early lessons of his basic training.

The main idea of the educational reconditioning program is to return the casualty to army duty as quickly as possible, in the best physical condition and mentally as good as or better than before his injury. The same ideal is sought if the soldier is going eventually to return to civilian status.

NEW LIGHTWEIGHT ARTIFICIAL LEG

The War Department stated recently that an improved artificial leg, made of light metals, plastic or fiber, will shortly be made available to amputees of the Army. The new prosthesis is the result of study and recommendations made by the National Research Council, National Bureau of Standards, artificial limb manufacturers, scientists, army and navy surgeons and the Veterans Administration and will be standardized for use by the Army. It provides the best innovations and improvements of the custom built leg now in use, and the important factors studied were interchangeability of parts, light weight, quality and strength of materials.

A cast aluminum knee joint for above the knee legs, consisting of knee block and shin section, and a cast aluminum ankle assembly, consisting of shin and foot sections, have been adopted. Both are to be produced in quantity as soon as the necessary modifications can be made for bonding to metal, plastic or fiber. Joints have been carefully tested by the Bureau of Standards, and specifications provide for the best available metal and finish.

A complete assortment of the various parts that go into an artificial leg will be made available to amputation centers so that each center will be able to continue the policy of making custom built legs in each amputation case.

WOMEN IN ARMY MAY ASK FOR U. S. ASSIGNMENT

In a recent announcement from the War Department it was stated that theater commanders are authorized to return for duty in the United States any woman officer, woman warrant officer or enlisted woman, on her request and presentation of satisfactory evidence that her husband has been returned from permanent overseas assignment with the armed forces to the United States for reassignment, hospitalization or honorable discharge. The new ruling, which applies only to women overseas, is in addition to an older policy with regard to married members of the Women's Army Corps whose husbands have been discharged for medical reasons.

ARMY AWARDS AND COMMENDATIONS

Major Albert B. Smith

The Legion of Merit was recently awarded to Major Albert B. Smith, formerly of Norwich, N. Y. The citation states, in part, "Working with medical units that had never made a landing behind enemy lines, Major Smith trained and organized these units to the extent that on D day, during the landing on Anzio, casualties were treated and evacuated with great speed and dispatch. He directed the establishment of the first permanent cemetery on the beachhead and personally supervised the speedy collection and burial of the dead. When given the duties as post surgeon in Anzio he established contact with all other medical units in the area, both British and American, and planned his medical service so that large numbers of casualties from both land and sea were treated and evacuated in a very efficient manner. Given the responsibility of supervising conditions inside Anzio, he arranged for the immediate elimination of mosquito breeding points, the cleaning of buildings, enforcement of antimalaria measures . . . for the protection of all troops in the city. Major Smith's services were invaluable in maintaining the health and safety of troops stationed in the city of Anzio." Dr. Smith graduated from McGill University Faculty of Medicine, Montreal, in 1938, was commissioned a first lieutenant in September 1939 and was called to active duty in November 1940.

Colonel Francis Brown Berry

The Legion of Merit was recently awarded to Col. Francis Brown Berry, formerly of New York City, "for exceptionally meritorious conduct during the North African campaign." The citation in part stated that "during the operation of the hospital (9th Evacuation) in the Tebessa area in North Africa from Jan. 22 to Feb. 17, 1943, . . . when the enemy broke through at Kasserine Pass and it became necessary to move back the hospital on short notice, Lieutenant Colonel Berry quickly organized and directed a system of detailing parts of the hospital to set up in the rear and admit the 363 patients remaining in the hospital, many of whom were seriously wounded and could not stand the long trip necessitated by existing lines of evacuation. His organizing ability and surgical judgment were reflected directly in the medical record and contributed substantially to the morale and confidence of the combat troops in that area." Dr. Berry graduated from Harvard Medical School, Boston, in 1917 and entered the service May 10, 1942.

Lieutenant Colonel Bert Bradford Jr.

The Bronze Star has been awarded to Lieut. Col. Bert Bradford Jr., formerly of Charleston, W. Va., for meritorious service in Belgium. Dr. Bradford has been attached to an evacuation hospital overseas since the summer of 1943 and has seen service in England, France and Belgium. He graduated from Washington University School of Medicine, St. Louis, in 1935 and entered the service March 28, 1941.

Major Victor E. Nelson

Major Victor E. Nelson, formerly of Detroit, has been awarded the Purple Heart and the Bronze Star with cluster and has two citations for bravery under fire. Dr. Nelson graduated from the University of Michigan Medical School, Ann Arbor, in 1932 and entered the service Nov. 10, 1942.

Lieutenant Colonel Jack F. Burnett

Lieut. Col. Jack F. Burnett, formerly of Ennis, Texas, was recently awarded the Bronze Star for meritorious service as flight surgeon with a unit in China. Dr. Burnett graduated from the University of Oklahoma School of Medicine, Oklahoma City, in 1939 and entered the service Oct. 1, 1940.

Captain F. C. Winskunas

The Bronze medal for bravery and efficiency was recently awarded to Capt. F. C. Winskunas, formerly of Chicago. Dr. Winskunas graduated from Loyola University School of Medicine, Chicago, in 1932 and entered the service Oct. 21, 1942.

NAVY

NAVY AWARDS AND COMMENDATIONS

Rear Admiral William Chambers

Rear Admiral William Chambers, who served as inspector, Medical Department Activities, Pacific Area, from October 1942 to Aug. 1, 1944, was recently awarded the Distinguished Service Medal. He is now medical officer in command, National Naval Medical Center, Bethesda, Md. The citation read "for exceptionally meritorious service to the government of the United States in a duty of great responsibility as inspector, Medical Department Activities, Pacific Area, from October 1942 to Aug. 1, 1944. Working tirelessly and with brilliant administrative skill, Rear Admiral Chambers carried out his vital assignments throughout the combat areas of the South, Southwest and Central Pacific, expeditiously effecting the organization of medical facilities which included first aid treatment in the field, hospitalization and evacuation of the sick and wounded, the establishment of medical storehouses and supply depots for the fleet and shore activities and the preliminary plans for care of natives in conquered territory. A qualified flight surgeon, he personally participated in the evacuation of the first battle casualties from Bougainville prior to the organization of a regular air evacuation service and later, by his unwavering efforts and excellent judgment during our operations in the Marianas Islands, contributed materially to the saving of a large number of lives. Consistently applying his superior professional knowledge efficiently and with outstanding resourcefulness, Rear Admiral Chambers distinguished himself as a forceful leader and was largely responsible for the success of the Medical Department's program in this theater of war." Dr. Chambers graduated from Jefferson Medical College of Philadelphia in 1907 and entered the service April 6, 1908.

Captain George M. Lyon

Capt. George M. Lyon, now on special assignment at the Naval Hospital in Philadelphia, was recently awarded the Bronze Star "for meritorious performance of duty as chemical warfare officer on the staff of commander, United States Naval Forces in Europe, during the period August 1942 to September 1944. Captain Lyon, by his force of character, industry, intense interest and special knowledge in the field of chemical warfare, has been largely responsible for the development—not only in the Medical Department but in all departments—of an appreciation and understanding of the possibilities of chemical warfare. He was chiefly responsible for the training in defense against chemical warfare of the naval forces organized in the United Kingdom for the assault on North Africa and more recently organized the program of instruction for all naval personnel engaged in the operations against the coast of France. As a result of this indoctrination the naval forces involved were prepared to a very high degree to take proper measures if they had been confronted with the use of chemical agents. By his individual effort he has established and maintained liaison with all branches of the services and civilian agencies which were doing investigative work in this field in the United Kingdom and as a result has transmitted much valuable information to the Navy Department. The imaginative professional ability and unselfish devotion to duty displayed by Captain Lyon during this period were in keeping with the best tradition of the United States naval service." Dr. Lyon graduated from Johns Hopkins University School of Medicine, Baltimore, in 1920 and entered the service April 10, 1942. Dr. Lyon is a member representing the American Medical Association on the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association.

Lieutenant Floyd Glenn Warrick

The Legion of Merit was recently awarded to Lieut. Floyd Glenn Warrick, formerly of Glendale, Calif., "for exceptionally meritorious conduct in the performance of outstanding service to the government of the United States as assistant battalion surgeon and later as battalion surgeon prior to and during the operations against enemy Japanese forces on Tarawa Atoll, Gilbert Islands, Nov. 20 to 24, 1943. Exercising sound judgment

and superior professional knowledge, Lieutenant (then Lieutenant, Junior Grade) Warrick expeditiously trained the personnel and prepared the plans of the medical section for the attack on this highly strategic island. When his battalion surgeon was killed during the ensuing action he promptly established an aid station in the cove area of the North Beach of Betio Island and, working tirelessly and with expert skill for three days and nights under extremely hazardous conditions, efficiently supervised the treatment of numerous casualties and all medical activities in the area. By his cool courage and tenacious devotion to duty in the face of grave peril, Lieutenant Warrick was responsible for the saving of many wounded marines who otherwise might have perished." Dr. Warrick graduated from the University of Nebraska College of Medicine, Omaha, in 1938 and entered the service Dec. 21, 1942.

Lieutenant (Junior Grade) Ralph C. Pollock Jr.

The Navy and Marine Corps Medal was recently awarded to Lieut. (jg) Ralph G. Pollock Jr., formerly of St. Louis. The citation read "for heroism while serving as medical officer of a Marine infantry battalion in action against the enemy on the island of Saipan, Marianas Group, on June 15, 1944. While the battalion was under heavy mortar fire and numerous casualties were suffered, Lieutenant Pollock, at great risk to his life and with utter disregard for his own safety, moved from one to another and treated at least fifteen wounded Marines. Despite the heavy mortar fire, Lieutenant Pollock administered this aid without the assistance of a corpsman and relieved the suffering and saved the lives of many Marines. His actions during a crucial phase of the attack were an inspiration to all and did much to bring order out of the confusion of a hotly contested beachhead and were in keeping with the highest traditions of the United States Naval Service." Dr. Pollock graduated from Stanford University School of Medicine, San Francisco, in 1941 and entered the service Sept. 7, 1943.

Commander Martin Van Brown

Under Secretary of the Navy Ralph A. Bard recently presented the Bronze Star to Comdr. Martin Van Brown, formerly of Carbondale, Ill., and now on duty as executive officer of the Hospital Corps School for members of the Women's Reserve, at the Naval Medical Center, Bethesda, Md. The citation accompanying the award read "for heroic achievement as medical officer attached to a warship during the assault and capture of an enemy Japanese held island in the Pacific war area on July 24, 1944. Cool and courageous under hostile fire, Commander Brown rendered gallant service throughout this hazardous operation and, although painfully wounded, continued at his post of duty for twelve hours administering medical care to casualties aboard. His skill and inspiring conduct were in keeping with the highest traditions of the United States naval service." Dr. Brown graduated from the University of Illinois College of Medicine, Chicago, in 1931 and entered the service June 18, 1930.

Captain Vincent Hernandez

The Bronze Star was recently presented to Capt. Vincent Hernandez of Washington, D. C., the citation accompanying the award reading "for meritorious achievement as force medical officer on the staff of Commander Air Force, United States Atlantic Fleet, from June 1943 until January 1945. Skillfully coordinating the work of medical officers of the Air Force, Atlantic Fleet, with that of naval air stations basing fleet aviation units, Captain Hernandez organized and supervised the activities of the officers under his jurisdiction and, by his untiring efforts and painstaking attention to particular needs, effected measures to insure the physical fitness, endurance and resistance of flying and maintenance personnel engaged in the widespread battle of the Atlantic. His exceptional success in this vital service reflects the highest credit on Captain Hernandez and the United States Naval Service." Dr. Hernandez graduated from Georgetown University School of Medicine, Washington, in 1918 and entered the service Sept. 10, 1921.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

The following data are to be noted in extension of the revised selective service deferment policy as published in *THE JOURNAL*, March 10:

1. Students are not included in these procedures.
2. Members of medical faculties who hold degrees other than that of doctor of medicine, such as Ph.D., do not come under the jurisdiction of the Procurement and Assignment Service.
3. This work should be completed by April 1 if protection is to be assured to those it is necessary to protect.
4. In filling out forms 42-A for the group 30 through 37, it is necessary only to forward one copy rather than three copies to the registrant's local board.
5. These forms do not have a place for certification but in the case of the Procurement and Assignment Service, as differentiated from all other certifying agencies, similar endorsement should be inserted in spite of advices to the contrary which are based on the standard procedure for all other certifying agencies.

6. All men holding the degree of doctor of medicine in the groups affected require certification by the Procurement and Assignment Service, as well as all interns who do not receive their M.D. degree until completion of their internships.

7. It would be of considerable help to the Procurement and Assignment Service if the institutions would forward military record, if any, of the individual, such as "Applied for commission, physically disqualified on (date)." This could be attached as a notation to the forms.

8. State chairmen are being supplied with copies of form DSS-333, but it is not absolutely essential that such lists be filled out on standard forms. Lists on plain pieces of paper with the proper headings will serve satisfactorily and will not delay getting the information forwarded to the state chairman. Keep in touch with your state chairman in regard to further details and further directions from his office rather than from other sources.

MISCELLANEOUS

JOURNAL AND WAR MEDICINE NEEDED FOR FOREIGN LIBRARIES

Physicians wishing to donate back copies of *THE JOURNAL* (and/or *War Medicine*), issues from 1939 on, to help restock medical libraries of liberated countries in Europe may do so by sending this material to the Foreign Information Research Division, Office of War Information, 224 West 57th Street, New York 19, N. Y.

The Office of War Information, working in collaboration with our legations and embassies overseas, is discovering the urgent need of the medical profession abroad in terms of information that has been developed during the war period. Representatives in OWI outposts will make a distribution of donations.

WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

New York

Induction Center, Grand Central Palace, New York: Report on Anesthesia Practices in the Present War, Dr. E. A. Rovenstine, April 6; Common Wartime Dermatoses, Dr. Frank C. Combes, April 13 (to be repeated on April 20); Common Allergic Manifestations, Dr. Joseph Harkavy, April 27.

Ohio

Crile General Hospital, Cleveland: Congenital Anomalies of the Genitourinary Tract, Dr. William E. Lower, April 24.

Pennsylvania

U. S. Naval Hospital, Philadelphia: Surgical Conditions Affecting the Knee Joint, Dr. Paul Colonna, April 6.

Virginia

Woodrow Wilson General Hospital, Staunton, Va.: Arterio-venous Fistula, Dr. William B. Porter, April 11.

A. A. F. Regional Hospital, Langley Field, Virginia: Psychosomatic Medicine, Dr. Solomon Katzenelbogen, April 27; Radiology, Dr. Frederick M. Hodges, April 27.

West Virginia

Newton D. Baker General Hospital, Martinsburg, W. Va.: Management of Plastic Surgery Problems in War, Dr. Edward A. Kitlowski, April 2; Clinic in General Surgery, Dr. William F. Rienhoff Jr., April 2; Psychosomatic Medicine, Dr. Claude L. Neale, April 16; Recent Developments in Nutrition, Dr. J. C. Forbes, April 16.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in *THE JOURNAL*, March 10, page 598)

COLORADO

Corwin Hospital, Pueblo. Capacity, 228; admissions, 4,628. Dr. Samuel B. Potter, Chief Surgeon (interns, July 1).

ILLINOIS

Englewood Hospital, Chicago. Capacity, 187; admissions, 5,693. Mr. A. R. Zeiter, Superintendent (5 interns, October 1).
St. Mary's Hospital, East St. Louis. Capacity, 276, admissions, 5,366. Sister M. Prosperia, R.N., Superintendent (interns).

KENTUCKY

Louisville General Hospital, Louisville. Capacity, 587; admissions, 9,971. Dr. John Walker Moore, Medical Director (residents—medicine, surgery, gynecology and obstetrics, pediatrics, disqualified for medical service).

MARYLAND

Maryland General Hospital, Baltimore. Capacity, 268; admissions, 4,977. Mr. Stewart B. Crawford, Superintendent (interns, July 1).
St. Agnes Hospital, Baltimore. Capacity, 277; admissions, 5,788. Sister Rosanna, R.N., Administrator (resident—surgery, July 1, disqualified for military service).
Sinai Hospital, Baltimore. Capacity, 347; admissions, 6,083. Mr. Harvey H. Weiss, Executive Director (resident—obstetrics, July 1, disqualified for military service).

NEBRASKA

Bishop Clarkson Memorial Hospital, Omaha. Capacity, 160; admissions, 4,662. Miss Cecelia Meister, R.N., Superintendent (intern).

NEW JERSEY

Muhlenberg Hospital, Plainfield. Capacity, 330; admissions, 6,319. Mr. John R. Howard Jr., Superintendent (4 interns, July 1).

NEW YORK

Cumberland Hospital, Brooklyn. Capacity, 400; admissions, 5,790. Dr. Max Seide, Medical Superintendent (3 interns, July 1).
Gouverneur Hospital, New York City. Capacity, 220; admissions, 3,221. Dr. O. I. Bloom, Medical Superintendent (3 interns, July 1).
Mother Cabrini Memorial Hospital, New York City. Capacity, 205, admissions, 3,212. Mother Coriuna, R.N., Superintendent (interns).

OHIO

City Hospital, Akron. Capacity, 421, admissions, 10,909. Mr. Worth L. Howard, Administrator (2 residents—surgery, July 1, disqualified for military service).
Deaconess Hospital, Cincinnati. Capacity, 198; admissions, 4,372. Mr. William H. Freising, Superintendent (4 interns, July and August).

PENNSYLVANIA

St. Joseph's Hospital, Pittsburgh. Capacity, 200, admissions, 4,507. Sister Anna Regina, Superintendent (interns, April 1, 1946).

TEXAS

Methodist Hospital, Dallas. Capacity, 225; admissions, 8,193. Dr. C. W. Seewenbach, Medical Director (interns).
St. Paul's Hospital, Dallas. Capacity, 300; admissions, 12,444. Sister M. Antonio, R.N., Superintendent (interns).

ORGANIZATION SECTION

Official Notes

ABSTRACT OF MINUTES OF MEETINGS OF BOARD OF TRUSTEES HELD FEBRUARY 15 AND 16, 1945

A two day meeting of the Board was held in the headquarters of the Association on Thursday and Friday, February 15 and 16, preceded by a full day meeting of the Executive and Finance Committee, during which careful consideration was given to the business of the Association.

INVESTMENTS

The first order of business was a review of the investment portfolio of the Association, and action was taken with respect to the purchase and sale of securities.

TEMPORARY SECRETARY FOR COUNCIL ON MEDICAL SERVICE AND PUBLIC RELATIONS

The Board authorized the employment on a part-time basis of Mr. Thomas A. Hendricks, executive secretary of the Indiana State Medical Association, to act as temporary secretary of the Council on Medical Service and Public Relations.

APPROPRIATIONS

Appropriations were made for the conduct of the various councils, bureaus, committees and departments of the Association, for exhibits, for the usual conferences and for scientific and therapeutic research.

BOARD OF TRUSTEES NEWS LETTER

The Board authorized the preparation in the headquarters office about twice a month of a news letter for circulation under the name of the Board of Trustees, with the approval of the Secretary of the Board and the Secretary and General Manager of the Association, to members of the House of Delegates, officers of the Association, officers of state medical societies and councils.

CANCELLATION OF ANNUAL SESSION OF ASSOCIATION

The Board confirmed its mail vote, which was unanimously in favor of canceling the annual session of the Association in 1945, and authorized the Secretary and General Manager to make application for a meeting of the House of Delegates to be held this year.

ELECTION OF DR. ROBERT A. PEERS TO BOARD OF TRUSTEES

The Board also confirmed its mail vote, which was unanimously in favor of the election of Dr. Robert A. Peers of Colfax, Calif., to serve as Trustee in the place of Dr. Edward M. Pallette (deceased) until the next meeting of the House of Delegates.

LEGISLATION

The Board approved the appointment of Dr. R. L. Sensenich and Dr. Victor Johnson to confer with representatives of the American Hospital Association with respect to the Hill-Burton Hospital Construction Bill when and if such a meeting is deemed necessary and to appear before the Senate Committee on Education and Labor when hearings on that bill are held.

The Board also approved the appointment of Dr. Walter Donaldson and Dr. Morris Fishbein to confer with two representatives each of the American Hospital Association and the Editors and Publishers Association for the purpose of developing a press code for hospitals.

REQUEST FOR SECTION ON PHYSICAL MEDICINE

The opinion of the Council on Scientific Assembly, to which a request from the Baruch Committee on Physical Medicine

was referred, to the effect that this request for a section on physical medicine should be referred to the House of Delegates, was approved by the Board.

MOVEMENT TO MINIMIZE TRAFFIC ACCIDENTS AND TO CONSERVE MANPOWER AND TRANS- PORTATION FACILITIES

The Board expressed its willingness to cooperate to the fullest extent with the International Association of Chiefs of Police in its effort to decrease traffic accidents and to conserve manpower and transportation facilities, and instructed the Editor of THE JOURNAL to make editorial comment on this subject.

INCREASE IN RESERVE FUND

The reserve fund for machinery and equipment was increased, in view of the fact that it has been impossible to make necessary purchases along these lines since the beginning of the war and that present machinery and equipment is steadily wearing out or becoming antiquated.

APPOINTMENTS

The following appointments were made to editorial boards of special journals and to councils and committees (unless otherwise stated, the appointee succeeds himself):

American Journal of Diseases of Children, Dr. James L. Wilson; *Archives of Dermatology and Syphilology*, Dr. Paul A. O'Leary, Rochester, Minn., to succeed Dr. Charles C. Dennie; *Archives of Internal Medicine*, Dr. John H. Musser; *Archives of Neurology and Psychiatry*, Drs. Charles D. Aring and Louis Casamajor; *Archives of Ophthalmology*, Dr. W. L. Benedict; *Archives of Otolaryngology*, Dr. Chevalier Jackson; *Archives of Pathology*, Dr. Wiley Davis Forbus, Durham, N. C., to succeed Dr. Oscar T. Schultz, who resigned because of illness; *Archives of Surgery*, Drs. Waltman Walters and Walter E. Dandy; Council on Pharmacy and Chemistry, Drs. Morris Fishbein, Perrin H. Long, G. W. McCoy and Elmer M. Nelson; Council on Physical Medicine, Drs. A. U. Desjardins, Frank H. Krusen and H. B. Williams; Council on Foods and Nutrition, Dr. Morris Fishbein and Dr. A. Ashley Weech, Cincinnati, to succeed Dr. Irvine McQuarrie (resigned); Council on Industrial Health, Drs. Leroy U. Gardner, A. J. Lanza and C. D. Selby; Committee on Scientific Research, Dr. Martin H. Fisher; Committee for the Protection of Medical Research, Dr. William J. Kerr and Father A. M. Schwitalla, and Committee on Postwar Medical Service, Mr. Barry Smith, director of the Commonwealth Fund, to succeed Dr. Alan Gregg (resigned).

Dr. William Weston, Columbia, S. C., and Dr. Edgar P. Copeland, Washington, D. C., were appointed to serve as conference members of the Committee on Cooperation with Government and Medical Agencies of the American Pediatric Society, for the purpose of taking up any child health emergency situations that may arise.

HANDLING OF POSTWAR MEDICAL SUPPLIES

The Secretary and General Manager was authorized to notify the United States Public Health Service that the recommendations of the Committee on Drugs and Medical Supplies of the Division of Medical Sciences of the National Research Council, as reported to the Committee on Postwar Medical Service, are concurred in by the Board and represent its principle in the handling of postwar medical supplies.

MISCELLANEOUS

Many other matters, too numerous to mention in the limited space available for this abstract, were considered by the Board. Some of these will be reported on in the future.

N. B. C. NETWORK BROADCASTS OF DOCTORS LOOK AHEAD

Doctors Look Ahead in the next four weeks to four vital topics affecting the health of the nation in the critical months of war and peace approaching:

March 24. Juvenile Delinquency, a topic which is on every tongue and for which innumerable solutions are proposed. Doctors Look Ahead will stress the responsibility of parents for the so-called delinquency of youth.

March 31. Accidents, which have taken an increased toll of American lives on the highway and in industry but even more so in the home. Doctors Look Ahead will stress prevention of accidents and emergency care of the injured.

April 7. Tuberculosis, which was numbered a few years ago among declining diseases but which has now begun again to show its usual wartime trend, namely upward. Doctors Look Ahead will point out the causes and suggest countermeasures.

April 14. Cancer, to which the nation's attention is officially directed in presenting by proclamation of the President pursuant to act of Congress. Doctors Look Ahead will stress new opportunities for cancer victims of the future.

Doctors Look Ahead is heard on one hundred and twenty-three stations of the National Broadcasting Company network each Saturday at 4 p. m. Eastern War Time, (3 p. m. Central War Time, 2 p. m. Mountain War Time and 1 p. m. Pacific War Time). Some stations may record the program and broadcast it at a time which suits their schedule better. Local newspaper radio announcements should be consulted.

Washington Letter

(From a Special Correspondent)

March 19, 1945.

Military Affairs Committee Studies Nurse Draft

Hearings on the proposed nurse draft opened this morning in the Senate Military Affairs Committee room in the Capitol with Senator Elbert D. Thomas, Democrat of Utah, presiding. The Senate group had decided to hold public hearings on the House approved nurse draft bill following decisions in both chambers on manpower legislation. Conferences also opened today between the House and the Senate to reconcile the conflicting manpower bills passed by each body.

The House bill would draft unmarried nurses, male and female, for commissions in the armed forces, affecting nurses over 19 and under 45. It passed the House March 7. Senator Thomas said that in view of amendments made by the House to the May nurse bill, and changes in regulations made by the Army and Navy, prospects of agreement with the House appeared very favorable. Among changes in army and navy requirements which give the bill more favorable Senate chances are those lifting the Navy's ban against marriages in the Navy Nurse Corps and the lowering of the Army's physical requirements. Senator Thomas said that amendments putting male nurses on the same basis as female nurses and the ban on interference with the education of nurses would also win Senate support.

The National Nursing Council urges an immediate inventory of all nurses up to 65, married and single, as a first step either to drafting or to recruiting voluntary enlistments of nurses. The council, clearing house for the sixteen major nurses' organizations, revealed that although 60 per cent of the more than 220,000 active nurses not on military duty are eligible for Army and Navy service, voluntary response has dwindled to about 800 a week.

Administration Starts Its Own Probe of Veterans' Hospitals

The administration moved quickly to conduct its own investigation of magazine charges that veterans are receiving improper treatment in government hospitals. Representative Rankin, Democrat of Mississippi, announced that the House World War Veterans Committee, of which he is chairman, will investigate, following the announcement by Veterans Administrator Frank T. Hines that he had ordered a sweeping probe into all veteran hospital facilities throughout the country. The charges

had wide repercussions. Newspapers recommended that the Veterans Administration hospitals and doctors be freed "from the blighting hand of lay domination that now grips it." Brigadier General Hines was described as "the last man in the world who should be controlling this program . . . he displays an unconscious antipathy toward good medicine." Replacement of the present medical director of the Veterans Administration hospital program, Dr. Charles M. Griffith, "by an outstanding medical man not lacking in spine, vision and energy," also was urged. It was proposed that such a man should be aided by an advisory group of medical experts and "given freedom to shake up the whole program and to provide the best available medicine for our sick and disabled vets." Mrs. Roosevelt entered the controversy by blaming the people of the nation for "neglecting to know" what is going on in veterans hospitals. "As citizens we should visit the hospitals and pay attention to what we see," she said.

Sparkman Urges Program for Physically Handicapped

The need for a national program of rehabilitation for the physically handicapped was likened by Representative John J. Sparkman of Alabama to the national need for a program of rehabilitating physical resources, forests, soil and water, which brought the Tennessee Valley Authority to his district. Addressing the Washington Lodge of the American Federation of the Physically Handicapped, in the National Press Club lounge, he said "Only ignorance of the situation has caused us to lag so badly in rehabilitation of human beings." Under present rehabilitation laws an average of 8,500 persons a year have been rehabilitated and "made self respecting, productive taxpayers," he said. However, "casualties on the home front have been 800,000 a year." He expressed confidence that the House will continue a study of the problem begun last session by a subcommittee under Representative Augustine B. Kelley of Pennsylvania. Capt. Howard H. Montgomery, Navy officer in charge of rehabilitation, outlined the Navy's program to return disabled men to usefulness, and Earle M. Sawyer, Civil Service Commission consultant, told of placement of handicapped in federal service.

Druggists Advise Caution in Use of Penicillin

Although 130 billion units of penicillin, or about 6,500,000 doses, are being rushed to the nation's drug stores, hospitals and drug supply houses for civilian use starting March 15, purchasers have been warned by druggists to exercise care in its use. "The penicillin we have available is for injection under conditions that virtually call for hospitalization," said a spokesman for the Washington Druggists Association. "It requires injections at three hour intervals over a protracted period and under constant observation. Because of this we believe enough has been made available to meet present requirements." The drug supply section of the War Production Board said that though a physician's prescription is not mandatory for sale of the drug, because of the form in which it has been made available, almost no druggist will sell it except at a doctor's request. The present release must last until April 1, but the WPB has guaranteed a minimum of 1,000,000 additional vials for April, and it expects the amounts to continue to increase.

Congress Honors Chinese Doctor Who Saved Fliers

Dr. Shen-Yen-Chen, Chinese doctor who gave medical care to Lieutenant Ted Lawson and four companions forced down over Free China after a raid on Tokyo, was introduced to Congress by Representative Jennings Randolph. He refused payment from the fliers, but in appreciation the United States is giving him a two year surgery course at Harvard Medical School. The feat is portrayed in the current movie "Thirty Seconds Over Tokyo."

Capital Notes

Ten medical officers of the Veterans Administration will attend an eight week course in tropical diseases conducted by the Army Medical School at Walter Reed Hospital Army Medical Center.

Governor Herbert O'Connor of Maryland announced extensive postwar hospital building plans for the state when he opened a drive to raise \$700,000 for a general hospital in Silver Spring, which adjoins the Capital.

The National Capital Parks and Planning Commission has approved plans for construction of two new hospitals in the District, Georgetown University and George Washington University to be the sponsors. They will each house 400 patients.

Electrical creation of speech was demonstrated to the National Geographic Society in Constitution Hall by Dr. J. Owen Perrine, with a machine, Voder, operated from a console like an old fashioned organ, to talk, recite poetry, converse with an audience, laugh and sing.

War has developed diversified uses for x-ray equipment in both medical and industrial fields, WPB reports, stressing the importance of this equipment in treating battle casualties.

Penicillin in the treatment of infections was discussed by the Smith-Reed Russell Society in George Washington University School of Medicine auditorium, with Dr. Chester F. Keefer, professor of medicine at Boston University, leading the discussions.

At the District of Columbia Medical Society this week Dr. Wilfred Overholser, superintendent of St. Elizabeths Hospital, was to speak on mental hygiene, and the Syphilis Journal Club was to hear talks by Drs. John R. Heller and C. James Van Slyke of the U. S. Public Health Service and Drs. Richard C. Arnold and John F. Mahoney, Staten Island, N. Y.

The Red Cross discloses that it is getting back in the form of a powerful measles preventive some of the blood it gave the armed forces, the preventive being immune serum globulin.

The oldest WAC hospital unit in the Army has received a plaque for its good work at Walter Reed General Hospital from Major Gen. Shelley U. Marietta, U. S. Army, commanding general of the Army Medical Center.

Inability of volunteer workers to lift a dying man into an ambulance has launched an inquiry here which may result in the practice, abandoned because of war shortages, of having physicians ride ambulances on emergency calls.

Disabled job applicants, including blind, deaf, armless and legless men and women, are being assisted into jobs with government or private industry through a new "job clinic" set up here.

Vice Admiral Ross McIntire, Surgeon General of the Navy, in an appeal for the Red Cross, said that the organization "cannot falter, because tougher fighting and higher casualties than bloody Iwo Jima lie ahead."

Medical Legislation

STATE LEGISLATION

Delaware

Bill Introduced.—H. 327 proposes in effect to permit any person licensed to practice the healing art in Delaware to render the medical care called for by the workmen's compensation act.

Illinois

Bill Introduced.—S. 167 proposes to condition the issuance of a license to marry on the presentation of a physician's certificate that he has examined the prospective marital partners to determine whether or not they have conflicting blood types and that the determination of such examination has been communicated to the parties.

Maryland

Bills Introduced.—S. 517, to amend the medical practice act, proposes to authorize the issuance without examination of a license to practice medicine and surgery to resident citizens of Maryland over 30 years of age who have graduated from a class A medical school, have had at least one year of internship in a recognized hospital and have had at least three years of active service as a medical officer in the armed forces, in the Public Health Service or in the Veterans Administration. H. 321 proposes to authorize the state board of health or a local health officer, when it or he has reasonable cause to believe that any person is infected with a venereal disease and is likely to be a source of infection, to cause a medical

examination to be made of the person and, if the person is found to be infected with a venereal disease, to require such person to submit to treatment therefor.

Michigan

Bill Introduced.—H. 257 proposes to authorize the governor to appoint a board of industrial medical examiners to examine and license applicants to practice as industrial medical assistants. Such licentiates, however, are prohibited from practicing medicine or from undertaking the treatment or cure of disease.

Minnesota

Bills Introduced.—H. 632 proposes to require all hospitals supported in whole or in part by public funds and which are equipped with appropriate x-ray units, when requested by a licensed practitioner of any form of the healing art, to make x-ray examinations of the human chest for the purpose of diagnosing pulmonary tuberculosis. H. 786 proposes to create a sickness benefit fund from contributions by employees for the payment of benefits to employees who are sick and unable to work.

Missouri

Bill Introduced.—H. 206 proposes to prohibit any licensed physician, dentist, optometrist, osteopath, chiropractor, chiropractist or veterinarian from utilizing the prefix "Doctor" or "Dr." in connection with his name in a professional use without affixing thereto suitable words or letters designating the degree possessed or the particular type of practice in which he is engaged.

Nevada

Bills Introduced.—S. 125 proposes to require a public hospital to admit venereal disease cases at the expense of the county involved when, in the opinion of the state department of health, the appropriate local health officer or the director of venereal disease control, the persons infected with venereal disease may be a menace to public health. A. 156, to amend the laws relating to the practice of osteopathy, proposes, among other things, to eliminate those provisions limiting the scope of the practice permitted to osteopaths to manipulation and denying osteopaths the right to practice obstetrics, to administer or prescribe drugs or to perform surgical operations. Possibly the intended effect of this bill is to permit osteopaths to practice medicine and surgery without restriction. A. 165 proposes to authorize the establishment and operation of the Nevada Tuberculosis Sanatorium. A. 172 proposes to authorize the payment of cash sickness insurance to persons unable to work because of sickness. A. 175 proposes to enact a venereal disease control act. Among other things, the bill proposes to require any person who makes a diagnosis or treats a case of venereal disease and the superintendent of a hospital or dispensary or other institution in which there is a case of venereal disease to report the facts immediately to the county health officer. The bill proposes to provide for compulsory detention and treatment under stated conditions. Any person other than a licensed physician who undertakes to treat or prescribe for a venereal disease, or any druggist who refills a prescription without the instructions of the prescribing physician, is to be guilty of a misdemeanor and subject to fine. All residents of the state between 14 and 65 are to be required to "have their blood examined for syphilis by an approved laboratory test" and any person failing to do so is to be guilty of a misdemeanor.

New Mexico

Bill Introduced.—H. 275 proposes what in effect is a system of compulsory health insurance.

North Carolina

Bills Introduced.—S. 293 and H. 594 propose to provide a statewide program of hospital and medical care and to create the North Carolina Medical Care Commission, which is to be authorized on behalf of the state to contribute one dollar a day for each indigent patient hospitalized in any approved hospital and to survey the state to determine the hospital needs of the state and to make loans to medical students. The University of North Carolina is to be authorized to expand its two year

medical school into a standard four year medical school and to construct and equip a hospital at the university of at least 400 beds to provide hospital facilities for the people of the state. H. 554 proposes to establish a state cancer commission to establish and operate cancer clinics in the state. H. 786 proposes to require the state board of health to administer a program for the prevention and cure of cancer. With respect to indigent cancer patients, the board is to provide financial aid for diagnosis and treatment in any approved hospital in the state.

Ohio

Bills Introduced.—H. 284 proposes to enact a separate chiropractic practice act and to create an independent board of chiropractic examiners to examine and license applicants for licenses to practice chiropractic. H. 224, to supplement the medical practice act, proposes in effect to require the board of medical examiners to issue without examination a license to practice naturopathy to any resident who at the time of the passage of this bill is licensed to practice naturopathy in any other state. The bill further proposes to require the board to examine any person who holds a degree of Doctor of Naturopathy and who applies for a license.

Oklahoma

Bill Introduced.—H. 367 proposes to require every physician attending a pregnant woman to take or cause to be taken a sample of her blood at the time of the first examination and to submit that sample to an approved laboratory for a standard serologic test for syphilis.

Pennsylvania

Bills Introduced.—S. 398 proposes to appropriate \$2,000,000 to the Department of Health to establish rheumatic fever clinics throughout the state. S. 355 proposes to authorize the State Department of Health to require all persons reasonably suspected of being infected with venereal disease to submit to medical examination and blood test or other approved diagnostic procedure for the purpose of ascertaining the presence of venereal disease. The board is to be given power to require such person to submit to the diagnostic procedures indicated and if found infected to submit to appropriate treatment. The bill further proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a physician's certificate that the party has submitted to an examination and serologic test to determine the existence or nonexistence of syphilis and that in the physician's opinion the party is not infected with that disease or if so infected is not in a stage of the disease which is likely to become communicable. Likewise the bill proposes to require every physician attending a pregnant woman to take or cause to be taken, unless the woman dissents, a sample of her blood and to submit such sample to an approved laboratory for an approved serologic test for syphilis. H. 667 proposes that all residents under 12 years or residents over 65 be given a complete medical examination by examiners appointed by the secretary of health medical examiners. If the need for medical care is indicated from such examinations and if care cannot be provided because of financial conditions it is to be the duty of the state to provide necessary care. H. 880 proposes to authorize an incorporated nonprofit hospital to condemn such land as it desires for any purpose consonant with its charter or articles of incorporation.

Rhode Island

Bill Introduced.—H. 733 proposes to enact a naturopathic practice act.

South Carolina

Bill Introduced.—S. 60 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a physician's certificate, based on physical examination and on approved laboratory procedures, that the party either is not infected with syphilis or if so infected is not in a stage of that disease which may become communicable to the marital partner.

Texas

Bills Introduced.—H. J. Res. 59 proposes to submit to the electors of the state a proposition that in effect would do away with the present constitutional provision in Texas prohibiting the legislature from showing any discrimination between schools of medicine. The net effect of the proposed constitutional amendment would be to permit the legislature to enact separate cult practice acts with lower educational requirements than those now present in the medical practice act. H. 720 proposes so to amend the medical practice act as to make its provisions inapplicable "to chiropractors, duly licensed under the laws of this state, who confine their practice strictly to chiropractic as defined by statute."

Vermont

Bills Introduced.—H. 225 proposes so to amend the narcotic drug act as to expand the term "narcotic drugs" specifically to include isonipecaine. H. 222 proposes to authorize the State Department of Health to accept funds made available by federal law to the several states for assistance in the promotion of health and prevention of disease. S. 52 proposes to provide for a Vermont blood plasma bank to be governed by a board of control appointed by the governor. One member of the board is to be from the State Board of Health, one from the faculty of the medical college of the state university, one from the Vermont Hospital Association, one from the state medical society and one from the State Department of the American Legion.

Wisconsin

Bill Introduced.—A. 372, to amend the medical practice act, proposes to authorize the suspension, as well as the revocation, of a license to practice medicine for the causes stated in the present law.

Council on Medical Service and Public Relations

INSURANCE PLAN LEGISLATION

The Council has been informed by the Bureau of Legal Medicine and Legislation on the basis of advice from its legislative reporting service that so far in 1945 laws authorizing organization and operation of nonprofit medical service plan corporations have been enacted in Tennessee, Iowa and North Dakota. Similar bills are in process of enactment in Kansas, Minnesota and South Dakota. In addition, a law permitting a nonprofit hospital service corporation to operate a supplementary medical service plan in conjunction with a hospital service plan has been enacted in West Virginia. No other similar bills are pending today, according to available information.

IOWA PASSES MEDICAL SERVICE PLAN LEGISLATION

A bill to authorize the operation of nonprofit service plans in Iowa was approved by the governor on February 15. It is understood that the Iowa Medical Service, sponsored by the Iowa State Medical Society, has qualified under the law and expects to offer to the public a medical plan which in some aspects is broader than any plan now operating under medical society auspices. Subscribers to the proposed plan of Iowa Medical Service will be insured against the costs of surgical and obstetric services in or out of the hospital and medical care for hospitalized illnesses after the first three day period in the hospital. X-ray examinations will be covered not to exceed \$15 for each service and with \$10 allowed for anesthesia. The basic cost is to be \$1 for individuals and \$3.25 for the family contract. Mr. Edwin M. Kingery, the executive secretary of the Polk County Medical Society, is to act as executive director of the Iowa Medical Service plan and is to serve half time with the Polk County Society and half time with Iowa Medical Service.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELAYE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Professorship in Obstetrics Named for Lyle McNeile.—A chair in obstetrics has been created at the University of Southern California School of Medicine, Los Angeles, in honor of the late Dr. Lyle G. McNeile, who organized the department of obstetrics and gynecology. He was a member of the first faculty of the school of medicine when it became affiliated with the University of Southern California in 1909. In 1931 he organized the department of obstetrics and gynecology, serving as instructor until 1939. He was emeritus professor at the time of his death in Los Angeles March 1.

CONNECTICUT

Alcohol Study.—The section of alcohol studies of the Laboratory of Applied Physiology, Yale University, plans to hold its third annual session July 10-August 3. The summer session was established in 1943 as the first formal school of its kind in the nation to make the results of scientific research available for application to the problems of alcohol in the community (THE JOURNAL, June 12, 1943 p. 454). This year's program will include daily seminars and lectures, and enrollment will be limited to 150 students. Application for admission to the session must be made by April 1.

Conference Talks at Institute of Living.—On February 7 the Institute of Living opened a ten week series of conference talks on neurology, psychiatry and allied sciences. Dr. Harry C. Solomon, clinical professor of psychiatry, Harvard Medical School, Boston, gave the first lecture, on psychiatry. Those who have given lectures and those who will speak include:

- Dr. Nolan D. C. Lewis, New York, Shock Therapy—Evidence For and Against Damage, February 14.
- Dr. Abraham Myerson, Boston, Constitution and Heredity, February 21.
- Dr. Sander Lorand, New York, Hypnotism as a Method of Therapy, February 28.
- Robert H. Felix, assistant surgeon general, U. S. Public Health Service, U. S. Public Health Service Attacks Mental Illness, March 7.
- Dr. Hiram Houston, New York, Curability of Epilepsy, March 14.
- Dr. Franz G. Alexander, Chicago, Practical and Flexible Psychoanalytic Techniques, March 21.
- Dr. Winfred Overholser, Washington, D. C., Psychiatry and the Law, March 28.
- Francis O. Schmitt, Ph.D., Cambridge, Mass., Physics and Technology in the Development of Physical Medicine, April 4.
- Carney Landis, Ph.D., New York, New Developments in Psychologic Tests, April 11.

ILLINOIS

Personal.—Dr. Roland R. Cross, Springfield, director of the Illinois Department of Public Health, has been named by Governor Green as chairman of an advisory committee on medical services to serve with the governor's committee on veterans' rehabilitation and employment.

Chicago

Personal.—Dr. Andrew C. Ivy, professor of physiology at Northwestern University Medical School, has been named to a three year term of membership to the National Advisory Cancer Council of the U. S. Public Health Service.

Robert Brown Named Medical Director at St. Luke's.—Dr. Robert F. Brown, assistant superintendent of the Stanford University Hospitals, San Francisco, has been appointed assistant administrator and medical director of St. Luke's Hospital, effective March 15. Dr. Brown graduated at the University of Oregon Medical School, Portland, in 1938, becoming assistant to the superintendent of Stanford University Hospitals in July 1942 and assistant superintendent in December 1943. Dr. Ambrose P. Merrill resigned as medical director January 1 (THE JOURNAL, January 6, p. 45).

Dr. Wakerlin New Chairman of Cancer Committee.—Dr. George E. Wakerlin, professor of physiology and head of the department, University of Illinois College of Medicine, has been elected chairman of the Chicago Cancer Committee, succeeding Dr. Ludvig Hektoen, who becomes honorary chairman. The committee will maintain offices at 139 North Clark Street, which will be shared by the Field Army of the American Cancer Society, of which Mrs. Arthur I. Edison is Illinois Commander, and where a central cancer information and referral center will be established.

Derriek Vail Named Professor of Ophthalmology at Northwestern.—Dr. Derriek T. Vail Jr., colonel in the Army medical corps and chief consultant to the Surgeon General in ophthalmology, has been appointed professor of ophthalmology and chairman of the department at Northwestern University Medical School. He will succeed the late Dr. Sanford R. Gifford, who was professor of ophthalmology at the medical school from 1929 until his death in February 1944. Dr. Vail graduated at Harvard Medical School, Boston, in 1923. Since 1926 he has been associated with the University of Cincinnati College of Medicine, first as instructor in ophthalmology and since 1937 as professor. Dr. Vail was Secretary of the Section on Ophthalmology of the American Medical Association from 1937 to 1942. He will take up his appointment at Northwestern as soon as he is released from the Army.

INDIANA

Executive Assistant for State Health Officer.—Mr. Walter J. Wolpert, formerly state director of training for the Federal Works Agency, has been appointed executive assistant to Dr. Thurman B. Rice, Indianapolis, acting secretary of the Indiana State Board of Health and acting state health commissioner. Mr. Wolpert will be essentially a business manager of the board of health and will be in charge of personnel and property, such as the building, equipment and automobiles. He will assist the commissioner in all sorts of matters which are nonprofessional.

KANSAS

Personal.—Dr. John L. Latimore, Topeka, has resigned from the state board of health because he is now serving in the state house of representatives. Dr. Gilbert A. Leslie, McDonald, resigned because he was moving to Golden, Colo. —Dr. and Mrs. Eben S. McIntosh, Burns, recently celebrated their golden wedding anniversary.

School Health Survey.—The Kansas State Board of Health is sponsoring a statewide school health study in cooperation with the state department of public instruction and other state agencies interested in child health, education and welfare. Groundwork was laid at a series of committee meetings the week end of February 10, at which Clair E. Turner, Dr. P.H., temporarily on leave from the Office of the Coordinator of Inter-American Affairs, Washington, D. C., as health education officer, was in attendance.

MASSACHUSETTS

State Meeting Canceled.—The annual meeting of the Massachusetts Medical Society, scheduled for May 22-24 at the Hotel Statler, Boston, has been canceled.

Tufts Alumni Association's Annual Dinner.—On April 11 the Tufts Medical Alumni Association of Greater Boston will hold its annual dinner meeting at the Copley Plaza, Boston. Among the speakers will be Senator Claude D. Pepper, who will discuss the findings and recommendations of the senate subcommittee on wartime health and education, of which he is chairman, and Drs. Alonzo K. Paine, professor of obstetrics; Dr. Louis E. Phaneuf, professor of gynecology; Capt. Albert Warren Stearns, dean on leave; Dr. Dwight O'Hara, acting dean; Dr. Benedict F. Boland, clinical professor of gynecology, and Leonard Carmichael, LL.D., president of Tufts College.

MICHIGAN

Site Changed in Medical Center Program.—At a recent meeting of the board of education a resolution was approved recommending that the corporation counsel be requested to withdraw from the condemnation proceedings now in progress to acquire possession of the block bounded by Hastings, St. Antoine, Farnsworth and Theodore avenues (THE JOURNAL, Dec. 2, 1944, p. 905) and substitute the block bounded by Beaubien, St. Antoine, Theodore and Warren avenues. Under other condemnation proceedings now under way this would make available for the center the three block area bounded by Beaubien, St. Antoine, Frederick and Warren. Dr. Basil C. MacLean, medical director of the Strong Memorial Hospital, University of Rochester, has been employed by the Medical Science Center of Wayne University to help in analyzing the construction, operating and program figures of the center. Dr. MacLean is making a detailed study of the units involved in the first cycle. *Detroit Medical News* reports that, pending the completion of Dr. MacLean's work, the fund raising counsel has been temporarily discontinued.

State Society Launches New Radio Program.—The Michigan State Medical Society has inaugurated a series of radio broadcasts including music, songs and stories over Station WJR at a cost of more than \$10,000 and under the

supervision of the society's special committee on radio. Dr. Clarence L. Candler, chairman of the committee, gave the inaugural lecture February 16. Among the speakers participating in the series, which will run Friday evenings for fifteen minutes beginning at 7:15, Eastern War Time, are:

- Dr. L. Fernald Foster, Bay City, Purposes of the Michigan State Medical Society, February 23.
- Dr. William A. Hyland, Grand Rapids, Michigan Medical Service, March 2.
- Dr. Oscar D. Stryker, Fremont, Medical Men in Service, March 9.
- Dr. Wilfrid Haughey, Battle Creek, Psychiatry After the War, March 16.
- Dr. Edward F. Sladek, Traverse City, Voluntary Programs of Medical Care, March 23.
- Dr. Ray S. Morrish, Flint, Health Education of the Public, March 30.
- Dr. Otto O. Beck, Birmingham, Protection Against Major Hazards of Illness, April 6.

A feature of the program is the opportunity to win a \$25 war bond or \$5 in war stamps each week. The contest includes the reporting of an interesting experience involving a doctor of medicine. In addition to Dr. Candler, other members of the committee on radio are Drs. Andrew S. Brunk, Detroit, president of the state society, and Patrick L. Ledwidge, Detroit. Another radio series sponsored by the state society featured dramatized skits.

MINNESOTA

The Judd Lectureship.—Dr. Allen O. Whipple, professor of surgery, Columbia University College of Physicians and Surgeons, New York, will present the annual E. Starr Judd lectureship in surgery at the University of Minnesota Medical School, Minneapolis, April 10, in the Museum of Natural History Auditorium. The title of his lecture will be "Problem of Portal Hypertension in Relation to Hepatosplenopathies."

Academy of Medicine Observes Twenty-Fifth Anniversary.—The Minneapolis Academy of Medicine celebrated its twenty-fifth anniversary with a dinner meeting at which Capt. Donald McCarthy (MC), chief of medicine, U. S. Naval Station Hospital, Great Lakes, Ill., discussed "Penicillin Therapy of Meningococcic Meningitis." Officers of the academy are Drs. Ernest R. Anderson, president; Jay C. Davis, vice president; Cyrus O. Hansen, secretary, and Thomas J. Kinsella, treasurer, all of Minneapolis.

Proposed Heart Hospital for Children.—The conversion of the Motley School in Minneapolis, now closed, into a heart hospital for children, has been proposed. Dr. Charles R. Drake, Minneapolis, is one of a committee of five appointed to take action on the project. Fifty thousand dollars has been offered for the building by the Variety Club, an organization of men in the entertainment field, with the intention of deeding it to the University of Minnesota and the stipulation that it be used as a heart hospital for children.

Chiropractor Returned to Workhouse.—An order signed by Judge Levi M. Hall of the Hennepin County District Court recently returned Michael J. Koehler, Minneapolis, to the Minneapolis workhouse to serve ten and one-half months remaining of a sentence imposed July 6, 1944 (*THE JOURNAL*, Aug. 19, 1944, p. 1150) for criminal abortion. Koehler had been released from the workhouse Oct. 20, 1944, after serving only forty-two days of his one year sentence on his lawyer's claim that Koehler was suffering from diabetes and chronic bronchitis and had to be under the care of his private physician. Koehler, whose chiropractic license had been revoked Sept. 6, 1944 following his plea of guilty to the performance of an illegal operation, was discovered by the women's bureau of the Minneapolis Police Department to be examining a woman patient at his old office seventeen days after being released from the workhouse and offering to do another criminal abortion for \$200.

MISSISSIPPI

Postgraduate Lectures.—The Mississippi State Board of Health and the Tulane University of Louisiana School of Medicine, New Orleans, are cooperating in a series of postgraduate lectures to be given throughout the state the last week in March. Newspapers report that the series will be held in Jackson March 26, Hattiesburg March 27, Meridian March 28, Tupelo March 29 and Greenwood March 30. Among the instructors will be Drs. Ralph V. Platou, head of the department of pediatrics at Tulane, George A. Mayer of the department of obstetrics and Virginia F. S. Howard of the division of maternal and child health of the Mississippi State Board of Health.

NEBRASKA

State Meeting Canceled.—The Nebraska State Medical Association announces that its seventy-seventh annual assembly has been canceled. The meeting was scheduled for Lincoln, May 7-10.

NEW YORK

New York's Health.—The death rate from all causes for New York in 1944 was 11 per thousand of population, 7 per cent less than in 1943. Lower rates were recorded only twice in the past, 10.8 in 1941 and 10.9 in 1942. The epidemic of poliomyelitis in 1944 caused the death of 337 persons more than in any previous year except in 1916 and 1931. The number of births declined to 230,000, giving a rate of 16.6 per cent, 9 per cent less than in 1943. The infant mortality was 33 deaths under 1 year per thousand live births. Maternal mortality was 17 deaths per 10,000 live and still births, 14 per cent below the previous minimum of 1943 and one third the rate of 1934, the year beginning the decline in maternal mortality in the state. Death from tuberculosis gave a rate of 44.6, an all time low record. A new low rate was established for suicides, 10.3. The rate for homicides was 2.1. Deaths from motor vehicle accidents declined from 10 per cent to 11.4, the lowest since 1917.

New York City

Committee on Glaucoma.—Dr. Willis S. Knighton has been named chairman of the committee on glaucoma of the National Society for the Prevention of Blindness, succeeding the late Dr. Mark J. Schoenberg. Recent additions to the committee on glaucoma include Major Fred W. Heflinger, superintendent, and Dr. Ferdinand L. P. Koch, chief of the glaucoma clinic, Manhattan Eye, Ear and Throat Hospital.

The Doctors' Orchestra Resumes Rehearsals.—The Doctors' Orchestral Society announces that rehearsals have been resumed and now take place on the first and third Thursdays of each month at the National Hospital for Speech Disorders, 61 Irving Place, according to *New York Medicine*. The orchestra is functioning as a string symphony conducted by Mr. Fritz Mahler. Recently elected officers of the society are Dr. William H. Spielberg, president and concert master; Charles S. Gardner, D.D.S., vice president; Dr. Harold S. Belcher, secretary and Dr. Charles Auer, treasurer.

Society News.—Dr. Jacob M. Gerslberg was recently elected president of the International Spanish Speaking Association of Physicians. Other officers include Drs. Ray Lyman Wilbur, San Francisco; James R. Goodall, Montreal, Que., and Juan B. Sacasa, Los Angeles, vice presidents. Dr. George W. Henry is chairman of the board of directors. Vincent du Vigneaud, Ph.D., professor of biochemistry, Cornell University Medical College, gave the principal paper, on "Recent Concepts of Metabolism of Choline and Methionine," before the Clinical Society of the New York Diabetes Association, February 8, at the New York Academy of Medicine. Recently elected officers of the New York Society of Physical Medicine include Drs. Karl Harpuder, president; Charles G. Buckmaster, vice president; Richard Kovacs, treasurer, and Madge C. L. McGuinness, secretary.

Symposium on Industrial Medicine.—The New York Post-Graduate Medical School and Hospital, Columbia University, announces an interdepartmental symposium on industrial medicine April 2-6 under the direction of Drs. Harry J. Johnson and Frank R. Ferlino. In addition to members of the teaching staff of the medical school, the following guest speakers will participate:

- Dr. Leverett D. Bristol, chairman, committee on education, Council on Industrial Health, American Medical Association.
- Dr. C. Charles Burlingame, associate in psychiatry, Columbia University College of Physicians and Surgeons, and chairman, committee on industrial medicine, American Society for Research in Psychosomatic Problems.
- Miss Patricia Edgerly, director, New York Medical Exchange.
- Frederick B. Flinn, Ph.D., professor of industrial hygiene, DeLamar Institute of Public Health, Columbia University.
- Dr. Forrest D. Gibson, Hartford, Conn., Hamilton Standard Propeller Division, United Aircraft Corporation.
- Dr. Eugene J. Gillespie, Washington, D. C., tuberculosis control division, U. S. Public Health Service.
- Dr. Edward C. Greene, medical director, American Air Lines.
- Dr. Joseph P. Hognet, medical director, Republic Aviation Corporation.
- Dr. John F. Johnson, medical director, Eastern Aircraft Division, General Motors Corporation.
- Dr. Anthony J. Lanza, assistant medical director, Metropolitan Life Insurance Company.
- Dr. Raphael Lewy, chief medical examiner, New York State Department of Labor, Compensation Bureau, New York.
- Dr. Richard M. Mills, Brooklyn, medical director, New York Telephone Company.
- Dr. Dwight O'Hara, Boston, acting director, division of industrial medicine, Liberty Mutual Insurance Company.
- Dr. Charles R. Williams, supervisor, industrial hygiene field service, Liberty Mutual Insurance Company.

John Scudder Goes to China to Organize Plasma Service.—Dr. John Scudder, director of the blood bank at the Presbyterian Hospital, arrived in Kunming, China, March 13, to organize the plasma service for the Chinese armies. In this work he will serve as a special consultant to Hsu Hsilin,

surgeon general of the Chinese Army Administration. Dr. Scudder is on leave of absence from his position at the Columbia University-Presbyterian Hospital Medical Center. Dr. Scudder went to China by airplane. The first Chinese blood bank, trained by Dr. Scudder at Presbyterian Hospital (THE JOURNAL, Aug. 14, 1943, p. 1137), has been functioning in Kunning since July 12, 1944 and has been supplying plasma to Chinese troops in Yunnan. The bank was organized in New York and was the first in the world entirely manned by Chinese doctors, nurses and technicians to prepare plasma for the armies of China. After a trial run in New York it was transferred to China. Dr. Scudder will assist the bank to overcome technical difficulties and to increase its output.

NORTH CAROLINA

State Medical Meeting Postponed.—For the first time since the Civil War the annual meeting of the Medical Society of the State of North Carolina has been postponed. It was scheduled to be held at Pinchurst, April 30-May 2. The action was voted on unanimously by the executive committee and all officers and committees are continued in office until such time as will seem practical to hold the next meeting. The postponement will continue until the ban for conventions is lifted.

University News.—Dr. Harold D. Green, formerly associate professor of physiology at Western Reserve University School of Medicine, Cleveland, has assumed the position of professor of physiology and pharmacology at Bowman Gray School of Medicine of Wake Forest College, Winston-Salem. Robert W. Lackey, Ph.D., professor of physiology at Southwestern Medical Foundation School of Medicine, Dallas, will serve as visiting professor of physiology for the trimester beginning March 28. The extensive lantern slide collection of the late Dr. Charles Hartwell Cocke, Asheville, has been presented to the Bowman Gray School of Medicine and added to the teaching collection of the school. Bids for the new \$250,000 outpatient department building were to be opened on March 20. Construction will begin immediately.

OHIO

New Assistant Commissioner of Mental Diseases.—Dr. Attilio LaGuardia, assistant director of Rockland State Hospital, Orangeburg, N. Y., has been appointed assistant commissioner of mental diseases for Ohio, according to the *New York Times*, February 18.

New Fund for Cancer Research.—The Ohio State University College of Medicine, Columbus, will receive \$20,000 from the estate of the late Werner Strang, Columbus builder, for the establishment of the "Werner Strang and Asta K. Strang Foundation for Cancer Research."

Gifts to Cincinnati College of Medicine.—Recent gifts to the University of Cincinnati College of Medicine include \$10,000 to the Christian R. Holmes Hospital from the Holmes Foundation, Inc., \$7,500 over three years from the Nutrition Foundation, Inc., for research directed by Dr. Josef Warkany, assistant professor of pediatrics, \$17,250 from six contributors for research directed by Dr. Tom D. Spies, associate professor of medicine, and \$5,000 from Mrs. David May to the college of medicine May Fund.

Industrial Commission Refuses Payments in Cleveland Disaster.—The State Industrial Commission has refused to make payments from its catastrophe fund to dependents of East Ohio Gas Company employees killed in the Oct. 20, 1944 Cleveland fire and directed the utility, a self insurer, to settle the claims. Seventy-three East Ohio workers were killed. The company contended that it comes under regulations of the commission for disaster payments from state funds providing a maximum of \$7,000 plus \$200 burial expenses for each victim, according to the state medical journal.

OKLAHOMA

Changes in Medical Faculty.—Dr. Basil A. Hayes was recently promoted to professor and chairman of the department of urology at the University of Oklahoma School of Medicine, Oklahoma City, and Dr. Ernst Lachmann to professor and chairman of the department of anatomy.

Memorial to Ned Smith.—The library of Dr. Ned R. Smith, president of the county society in 1934, has been presented to the library of the Tulsa County Medical Society by his wife, Mrs. Pluma Delore Smith, as a memorial to her husband. The collection contains not only first editions of the classics and translations from the French and German but also the latest textbooks in the field of neurology and psychiatry. Dr. Smith died in 1944.

OREGON

Officers of State Board.—Dr. Thomas D. Robertson, The Dalles, was recently elected president of the Oregon State Board of Health. Other officers include Drs. DeWitt C. Burkes, Portland, and Lorenzo D. Inskeep, Medford, vice presidents. *Northwest Medicine* reports that Dr. Frederick J. Stricker, who has resigned as state health officer, will continue as secretary of the state board until such time as Dr. Harold M. Erickson, the new state health officer, assumes the activities of the secretary's office (THE JOURNAL, March 3, p. 535).

PENNSYLVANIA

Ninety-One Years of Age.—Dr. George E. Benninghoff, Bradford, observed his ninety-first birthday February 10. He graduated at the University of Wooster Medical Department, Cleveland, in 1879. Dr. Benninghoff first started practice in Kendall Creek but settled in Bradford in 1886. The Bradford Star stated that Dr. Benninghoff retired in 1932 after he had incurred a broken hip in a fall.

Society News.—On April 5 Dr. John W. G. Hamon, Washington, will discuss "Silicosis" before the Fayette County Medical Society.—Dr. William Bates, Philadelphia, will address the Lawrence County Medical Society in New Castle, April 5, on activities of the state medical society since the 1944 annual session. Capt. Charles H. Whalen, M. C., addressed the society recently concerning his experiences in an evacuation hospital in France.

Philadelphia

Changes in Health Bulletin.—During 1945 the *Philadelphia Health Bulletin*, published by the Philadelphia Department of Public Health, will be issued monthly instead of bimonthly and as near the first of the month as possible.

Hospital News.—Kensington Hospital for Women terminated its activities on February 1 as the result of lack of funds and a shortage of nurses and transferred its functions to the Episcopal Hospital. The closed hospital was founded in 1883 by the late Dr. Howard A. Kelly.

Pittsburgh

New Allergy Group.—The Pittsburgh Allergy Society was recently organized with Drs. Leo H. Crip as president and Dr. James A. Mansmann, secretary-treasurer.

Society Moves Offices.—The Allegheny County Medical Society has moved its offices to 225 Jenkins Building. The offices were formerly located at 5092 Jenkins Arcade Building.

SOUTH CAROLINA

Building Fund Started for Permanent Home.—Since Dr. Hugh E. Wyman recently started a building fund for the permanent home of the Columbia Medical Society of Richland County with a gift of a \$500 bond, the fund has grown to \$4,000 through similar contributions.

Hospital Superintendent Becomes Director of Research.—Dr. Charles F. Williams, medical superintendent of the South Carolina State Hospital, Columbia, for thirty years, has resigned to become director of the hospital's research activities, effective May 1, according to the *Sumter Daily Item*. His successor as superintendent will be Dr. Coyt Ham. The report indicated that Dr. Williams would work toward building up the hospital's research foundation, established by the late Mrs. W. S. Brown, Columbia.

Urge Psychology School as Medical Adjunct.—A full time school of psychology to be connected with the Medical College of the State of South Carolina, Charleston, and a system of traveling psychiatric clinics was recommended for South Carolina by Dr. Victor H. Vogel of the U. S. Public Health Service, consultant in Office of Vocational Rehabilitation. The amendment resulted from the recent amendment of the Vocational Rehabilitation Act.

TEXAS

Conference on Venereal Diseases.—A one day conference on the control of venereal diseases was held in San Antonio, March 5, attended by about 300 representatives of civilian and military agencies. The conference, second of three regional meetings aimed at action to reduce the rate of venereal disease in the nation, followed one at Oklahoma City, March 2-3. The third session was held in Columbia, S. C., March 8-9. Actions taken at the conference include the adoption of a resolution backing two house bills pending in the Texas legislature, one requiring blood tests for syphilis for both parties applying for a marriage license, the other requiring attending physicians to take blood tests for syphilis of pregnant women. Legislation for a state supported institution for delinquent

juvenile Negro girls was among the resolutions made, as was a move for legislation permitting the courts to commit promiscuous sex offenders to institutions for undetermined periods for rehabilitation. It was also suggested that a state school to train social workers be set up in Texas and that a child welfare unit be maintained in each county.

VIRGINIA

Survey to Determine Communities Needing Physicians.—The Medical Society of Virginia, through its department of clinical and medical education, has started a survey to find out the communities in the state which need physicians. A report form has been prepared to assist communities in making known their needs. The *Roanoke Times*, February 26, reported that the medical society is not assuming responsibility for the placing of the physicians but is functioning solely to collect and distribute information with regard to community needs.

University News.—Dr. Stephen H. Watts, former professor of surgery, University of Virginia Department of Medicine, Charlottesville, has added a gift of \$5,000 to an earlier gift of \$15,000 for a Book Fund for the medical library. A gift of \$500 has been received from Dr. Francis H. McGovern, Danville, for the purchase of books in the fields of ophthalmology and otolaryngology for the medical library. The board of directors of the Virginia Society for Crippled Children and Physically Handicapped Adults has given a grant of \$2,500 to Dr. Hugh Page Newhill, assistant professor of neurology and psychiatry at the university, to support his work in the convulsive disorder clinic at the University of Virginia Hospital.

The McGuire Lectures.—The sixteenth annual Stuart McGuire Lectures and the spring postgraduate clinic of the Medical College of Virginia, Richmond, have been combined this year. Dr. Reginald H. Smithwick, Boston, will give the Stuart McGuire lectures April 5 and 6 on "Surgery of the Autonomic Nervous System in Peripheral Vascular Disorders and for the Relief of Visceral Pain" and "Surgical Intervention on the Autonomic Nervous System in Hypertensive Cardiovascular Disease." On April 6 a symposium on hypertension will be conducted by the following:

- Dr. Irvine H. Page, Cleveland, Physiologic, Medical and Surgical Aspects of Hypertension.
- Drs. Harvey B. Haag, and William B. Porter, Richmond, Medical Aspects of Hypertension.
- Dr. Benjamin J. ... , Physiologic Aspects of Hypertension.
- Dr. Tiffany J. ... , Hypertension in Pregnancy.

WEST VIRGINIA

Personal.—Dr. Thomas L. Harris, Parkersburg, president of the West Virginia State Medical Association, has been named by Governor Clarence W. Meadows to a four year term as a member of the board of governors of West Virginia University, Morgantown, effective March 12.

Changes in Hospital Superintendents.—Dr. George E. Gwinn, Beckley, has been named by Governor Clarence W. Meadows as superintendent of Pinecrest Sanitarium to succeed Dr. Erland H. Hedrick, who resigned (*THE JOURNAL*, Dec. 30, 1944, p. 1160) after being elected a member of Congress from the sixth congressional district. Dr. Gwinn has been serving as acting superintendent since January 1. Previous to that date he had served for several years as medical director at the sanitarium.

Compulsory Test for Syphilis.—After June 5 every pregnant woman residing in West Virginia must undergo a standard serologic test for syphilis. The West Virginia legislature, seeking a means to prevent the birth annually in this state of hundreds of children with syphilis, enacted into law a bill (H. B. 9) making it mandatory on every physician engaged to attend a pregnant woman to acquaint her with the provisions of the new law requiring that a standard laboratory test for syphilis be made at the state hygienic laboratory or at other laboratories approved by the state health department. The laboratory will provide a report in triplicate showing the results of the test. Forms will be prepared and furnished by the state health department. The original of the report will be sent to the physician submitting the specimen, a duplicate will be forwarded to the bureau of venereal diseases during the week the test is performed, and the triplicate will be retained by the laboratory for its files. The law provides that all laboratory reports shall be confidential and shall not be open to public inspection. Every physician required to report births and stillbirths shall state on each certificate whether a blood test was performed during pregnancy on a specimen of blood taken from the woman who bore the child. If the test was made, the physician will report the name of

the test used, the date performed and the name of the laboratory making the test. If no test was made, the physician must state the reason therefor. The result of the test must not in any case be reported on the birth certificate. As passed by the legislature, the law provides that the serologic tests are to be made by the state hygienic laboratory without charge. It is further provided that, on request, specimens are to be obtained without charge from pregnant women by county and district health officers. In areas where the services of a district or county health officer are not available the state health department is to assume the responsibility of obtaining the required blood specimens. There is to be no charge for this service.

WISCONSIN

Proposed Division of State Into Districts.—The state board of health will ask the 1945 legislature for the authority to divide the state into twenty sanitary districts instead of nine, which were set up in 1936, and for appropriations to staff and maintain these districts as fast as personnel can be acquired, according to the state medical journal. Although the proposed legislation will seek twenty districts, the board has plans for only seventeen in the near future.

College of Surgeons Holds Chapter Meeting.—The Wisconsin Chapter of the International College of Surgeons will offer the following program at the University Club of Milwaukee, March 28, the speakers to discuss the use of penicillin in the specialties indicated:

- Dr. Samuel G. Higgins, Milwaukee, ophthalmology.
- Dr. Matthew N. Federspiel, Milwaukee, oral surgery.
- Dr. Lemuel D. Smith, Milwaukee, orthopedic surgery.
- Dr. Rudolph W. Roehke, Milwaukee, obstetric surgery.
- Dr. Walter M. Kearns, Milwaukee, urology.
- Dr. Victor F. Marshall, Appleton, abdominal surgery.

GENERAL

Examination of Medical Technologists.—The Registry of Medical Technologists of the American Society of Clinical Pathologists announces that the spring examination of candidates for registration will be held in various parts of the United States and Canada on May 18.

Journal of Investigative Dermatology Resumes Publication.—The Society for Investigative Dermatology announces the resumption of publication of their periodical, the *Journal of Investigative Dermatology*, which temporarily suspended publication in 1942 on account of war conditions. The first number of volume 6 appeared in February. It will be issued bimonthly, one volume a year, at \$6 per volume, by the Williams and Wilkins Company, Baltimore 2.

Manuscripts Invited in Norton Medical Award.—December 1 has been announced as the final date for submission of manuscripts in the Norton Medical Award available through the publishers, W. W. Norton & Company, 70 Fifth Avenue, New York 11. The award consists of \$3,500, \$1,000 outright and the remainder as an advance against royalties. The contestant must be a professional worker in the field of medicine or may be two or more authors writing in collaboration, either of whom is a professional worker in the field of medicine. Subject matter may be autobiography, biography, history of any phase of medicine or the exposition of medical science or of medical theory. Additional information may be obtained from W. W. Norton & Company. Dr. Carl A. L. Binger, New York, was the recipient of the first award for his work on "The Doctor's Job" (*THE JOURNAL*, January 20, p. 175).

Meetings Canceled.—The Third War Conference on Industrial Medicine and Postwar Planning, scheduled for April 23-28 at the Drake Hotel, Chicago, has been canceled. *Industrial Hygiene News Letter* reports that, as far as is known at this time, none of the five associations which had planned to meet in Chicago will be holding a national meeting during the year. These groups are the American Industrial Hygiene Association, American Association of Industrial Physicians and Surgeons, National Conference of Governmental Industrial Hygienists, American Association of Industrial Nurses and American Association of Industrial Dentists. The Southwestern Medical Association has canceled its annual meeting, which was scheduled for Paducah, Ky., in May, the *Paducah Press* reported March 2. The meeting of the American Association of Genito-Urinary Surgeons, which was tentatively scheduled for June 7-9 at Stockbridge, Mass., has been canceled.

Fellowships in Allergy Available.—The American College of Allergists announces that the medical graduate committee of the Mayo Foundation has approved the placing of a fellowship at the Mayo Clinic and the Mayo Foundation. The selection of a person to receive the fellowship will be

made by Dr. Charles F. Code, assistant professor of clinical physiology, at the medical school, foundation and clinic and the medical graduate committee of the University of Minnesota Graduate School, Rochester-Minneapolis. The stipend will be \$1,500 a year with provision for a continuation of the fellowship for a second year, if desirable. According to the *Annals of Allergy* the granting of such fellowship is necessarily postponed until or toward the end of the war because Dr. Code is at present engaged in full time war research. Another fellowship has been created by the college of allergists to continue for two years and will be used to augment research directed at gaining fundamental knowledge necessary for the development of satisfactory methods for the standardization of allergenic extracts. Information concerning this fellowship may be obtained from Dr. George E. Rockwell, 2500 Melrose Avenue, Cincinnati 6.

Narcotic Violations.—The U. S. Bureau of Narcotics announced the following violations of the federal narcotic law:

Dr. Paul H. Pernworth, Venice, Ill., fined \$1,500 and placed on probation for three years following his plea of guilty in the U. S. District Court at Springfield, Ill.

Dr. John Henry Lee-Staples, Afton, Okla., received a suspended sentence of three years and was placed on probation for a similar period.

Dr. Alvin Schuman, Brooklyn, sentenced to a term of two and one-half years following his plea of nolo contendere in the U. S. District Court at Brooklyn.

Dr. William H. Goldschmidt, alias Hilarius W. Goldsmith, Willem Goldschmid and Vidor Goldschmid, an alien, New York, sentenced to imprisonment for eighteen months and placed on probation for a period of two years to begin after completion of the sentence following his plea of guilty in the U. S. District Court in the southern district of New York.

Dr. Gaston B. Justice, Asheville, N. C., pleaded guilty to an indictment containing three counts; he was fined \$300 on count one and judgment was suspended on counts two and three until the May 1945 term of court.

Dr. David J. Simpson, Lakeland, Fla., received a suspended sentence of two years Nov. 23, 1944 and was placed on probation for two years following his nolo contendere plea in the U. S. District Court of attempt to violate the federal narcotic law.

Dr. Nicholas A. Tonis, New York, received, Dec. 5, 1944, a suspended sentence of one year and one day in prison following his plea of guilty to violation of the federal narcotic law and was placed on probation for two years and fined \$500.

Million Dollars for Program in Physical Medicine.—The National Foundation for Infantile Paralysis has appropriated \$1,267,600 to train qualified physical therapists. Directed by a special committee in the field of physical therapy, the funds will be expended as follows: \$1,107,000 for scholarships to train new physical therapists, \$82,000 for fellowships to provide additional teachers and \$78,600 for general development of the field of physical therapy. The National Foundation, since it was organized in 1938, has expended up to now more than a million dollars in the development of the fields of physical medicine and physical therapy, according to a release March 19. The new program is designed to provide urgently needed personnel necessary to fulfilling the National Foundation's pledge that complete medical care will be assured, so far as possible, for infantile paralysis victims, regardless of age, race, creed, color or lack of financial ability to pay for services rendered. The special committee formed to assist in the development of the new program includes the following: ..

Dr. Irvin Abell, Louisville, Ky., chairman.
Dr. Donald B. Armstrong, New York, second vice president, Metropolitan Life Insurance Company.

Dr. Max M. Peet, Ann Arbor, Mich., chief, neurosurgical section, University Hospital, and professor of surgery, University of Michigan Medical School.

Dr. Morris Fishbein, Chicago, editor of *THE JOURNAL*.
Dr. Arthur L. Watkins, Boston, director of the department of physical therapy, Massachusetts General Hospital.

Dr. Melbourne G. Westmoreland, Chicago, staff, Council on Medical Education and Hospitals, American Medical Association.

Miss Jessie Stevenson, New York, president of the American Physiotherapy Association.

Miss Lucille Daniels, acting director, division of physical therapy at Stanford University, Stanford University, Calif.

Dr. Don W. Gudakunst, New York, medical director, National Foundation for Infantile Paralysis.

Basil O'Connor, L.L.D., New York, president, National Foundation for Infantile Paralysis.

Miss Catherine Worthingham, New York, director of technical education, National Foundation for Infantile Paralysis.

Preparation for entrance into approved schools of physical therapy requires graduation as a nurse, or physical educator, or two years' college training, including biology and other basic sciences. Applications for scholarships should be made to the National Foundation for Infantile Paralysis, 120 Broadway, New York 5, or to the American Physiotherapy Association, 1790 Broadway, New York 19.

LATIN AMERICA

Health Activities in Latin America.—Information Booklets for Biologists.—The Union of American Biological Societies has published booklets dealing with graduate instruction and research in the biologic sciences in the United States for distribution to biologists and biologic centers throughout the

Latin American republics. Science Service has cooperated in the printing and distribution of the booklets. Any one in the United States desiring a copy of either the Spanish or Portuguese booklet may secure one from Elmer G. Butler, Ph.D., president of the Union of American Biological Societies, Princeton University, Princeton, N. J.

Congress Against Tuberculosis.—Dr. Ovidio García Rosell, Lima, Peru, was elected president of the Pan American Congress Against Tuberculosis which was held in Havana, Cuba, January 15-21. Dr. Juan J. Castillo Arango, professor of medicine, University of Havana, Cuba, as president of the recent congress, presided over the scientific sessions and Dr. Antonio Navarrete, Sierra, assistant professor of medicine, presided over the business session. Among the speakers at the congress were:

Capt. Sol Roy Rosenthal, M. C., Reports of the Results of BCG Vaccination.

Dr. Leo Eloesser, San Francisco, Tuberculous Suppurations and Extra-pulmonary Fistulas in the Trachea and Bronchi.

Herman E. Hilleboe, Medical Director, U. S. Public Health Service, Objectives of Tuberculosis Control of the U. S. Public Health Service.

Dr. Chevalier L. Jackson, Philadelphia, The Anatomical Relationship of the Bronchus and Lungs from the Viewpoint of the Bronchoscopist.

Other representatives from the United States included Dr. J. Winthrop Peabody, Washington, D. C., and Mr. Murray Kornfeld, Chicago, immediate past president and executive secretary respectively of the American College of Chest Physicians.

Campaign Against Leprosy.—Colombia will carry out an extensive campaign against leprosy this year at an estimated cost of 3,000,000 pesos, according to a newspaper report, February 9. Existing facilities will be improved and a colony for 1,000 leprosy patients will be established in the state of Santander, with special plans for the care of the children. Specialists in leprosy will be sent to the United States and Brazil for further study, the New York Times announces.

Personal.—Dr. Nicolau Moraes Barros, São Paulo, Brazil, has been named research fellow of the Rockefeller Foundation on the staff of Harvard Medical School, Boston.

FOREIGN

Personal.—Dr. Daniel Fowler Cappell, professor of pathology at the University of St. Andrews since 1931, has been appointed to the chair of pathology at the University of Glasgow, in succession to the late Dr. John Shaw Dunn.—Sir John Boyd Orr has resigned as director of the Rowett Research Institute, Bucksburn, Aberdeenshire. The position also carries the directorship of the Imperial Bureau of Animal Nutrition and the joint editorship of *Nutrition Abstracts and Reviews*.

Research Institute to Be Named for Scientist.—Plans to establish in Palestine the Weizmann Institute of Science as a tribute to Chaim Weizmann, Sc.D., were announced on his seventieth birthday recently. The institute, if plans proceed, will be composed of four departments devoted to research in the fields of physical chemistry, pharmacology and chemotherapy, plastics and nutrition. Dr. Weizmann is director of the Daniel Sieff Research Institute in Rehovoth, Palestine.

Prizes Offered.—During the All-India Medical Conference in Cawnpore during the Christmas holidays, three prizes will be awarded, according to the *Journal of the Indian Medical Association*. A gold medal has been offered by Dr. Kumud S. Ray, Calcutta, ex-president of the association, for the best paper on puerperal sepsis. Capt. Kalidas L. Saha has offered a gold medal for the best paper on any subject in pharmacology, and Kaiser-i-Hind of Jamalpur has offered a gold medal in memory of his deceased son, Dr. Satyendra N. Sen, for the best paper on "intestinal obstruction and other complications of appendicitis, how to prevent and treat such complications and save the patients from the cruel sufferings and death."

New Dutch Medical Association.—In anticipation of the tremendous demands that will be made on the medical profession of the Netherlands when the still occupied provinces will have been freed and immediate alleviation must be brought to millions of victims of frost and famine, the physicians in the liberated area have formed an association to centralize their functions for a speedy rehabilitation of public health, according to the Netherlands Information Bureau. A central medical information bureau has now been established in Tilburg, in North-Brabant province, while a fortnightly periodical, *Medisch Contact* (Medical Contact), will keep the members of the new organization informed regarding health conditions as they will be found in the northern provinces. At the same time the association will represent the physicians in matters of an economic nature.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 24, 1945.

A Faculty of Ophthalmologists

The Council of British Ophthalmologists has resolved that there is need for an authoritative and representative body to guide ophthalmologists through the intricate and important problems to be settled in the near future, to represent their interests to the state and to coordinate their efforts, so that in the coming reorientation of the medical service of the country the greatest good may accrue to the people, while at the same time the interests of the profession may be preserved. Although circumstances may necessitate that changes be gradual, fundamental principles are now being evolved which will profoundly affect the medical profession and the community at large. For the ophthalmologic services the alternative is to have policies imposed by others or to establish an authoritative body able to initiate and criticize policy.

Some of the immediate problems which require examination and early solution are of great moment. The government's proposal for a national health service deals vaguely with ophthalmologic service, although it is clear that it intends to establish such a service. The Council of British Ophthalmologists proposes the establishment of a Faculty of Ophthalmologists which would have more weight than itself if made more directly representative of the whole body of ophthalmologists in the country. It will be the first task of the faculty to examine the many questions arising in connection with the government's scheme. Its aim will be, in collaboration with the appropriate ministries and other bodies concerned, to play an important part in determining the form which the ophthalmologic service will take. This raises questions not only of conditions of service but of the relation of the ophthalmologist to the dispensing and sight testing opticians, the methods of lens supply and the establishment and control of clinics. In addition to these medico-political matters the questions of education and research, clinic and hospital policy, industrial and other problems will assume importance in the immediate future.

The functions of the faculty will be (1) to encourage suitable standards of education in ophthalmology for undergraduate and postgraduate students, (2) to encourage research in ophthalmology and cognate subjects, (3) to secure such conditions in ophthalmic practice as will attract persons of high professional attainments and afford ample scope for the exercise of their abilities, (4) to maintain a high ethical standard and (5) to act as an authoritative body for consultation in matters of ophthalmologic interest. The faculty will consist of members and associates. Only ophthalmologists of full consultant status will be eligible for membership. They shall be (1) ophthalmologic surgeons to hospitals recognized as schools of ophthalmology by universities or other medical examining bodies, (2) other ophthalmologic surgeons who have been engaged for at least five years in full time practice as specialists approved by the council (provisionally these shall be general hospitals of more than 200 beds and ophthalmologic hospitals of more than 20 beds), (3) those who have retired from the appointments specified and (4) other ophthalmologic surgeons of consultant rank approved by the council, including those in the services or holding government appointments. For associate, any ophthalmologist who has been in at least two years full time practice as a specialist will be eligible. It is anticipated that the new faculty will work in cooperation with the universities and medical corporations.

Jobs for Those Disabled in Fighting for Their Country

An appeal that special consideration be shown men and women disabled in the country's service was made by Mr. Bevin, minister of labor, at a luncheon commemorating the silver jubilee of the National Industrial Council for Road Transport Industry. Mr. Bevin said that veterans may not be able to adjust themselves at once to the conditions which they will find when they return. In particular the disabled man or woman presents a difficult problem. The Ministry of Labor has done what it could to insure that industry take a proper proportion of such men and women, and Bevin felt entitled to ask that management should make a special study of the problem. A man with only one leg, for instance, could be a very good driver if properly trained, and experience had shown that those in other ways physically handicapped could do a good deal. In the road transport industry certain standards of fitness were laid down, but he hoped that exceptions would be made in the case of disabled veterans. If training or specialist treatment was needed to make such persons fit for work, the Ministry of Labor would be willing to cooperate. He had arranged for wide research to discover how persons with every possible type of disablement could be provided with a place in industry, for his experience has shown that the higher the skill and the more effective the occupation such persons could acquire, the more they were helped to conquer their disability.

Sir Henry Gauvain

Sir Henry Gauvain, a pioneer in the treatment of surgical tuberculosis, has died. Born in 1878, he received his medical education at St. Bartholomew's Hospital and qualified in 1906. Not long after he qualified he was appointed the first medical superintendent of the home for children suffering from surgical tuberculosis, founded at Alton by Lord Mayor Treloar. He soon showed his originality by objecting to the term "surgical tuberculosis," pointing out that the disease was a general one requiring general treatment—"life in the open air, far from towns, in a dust and germ free atmosphere and under the bactericidal and tonic action of the sun." He drew attention to the model provided by the treatment at Berck-sur-Mer on the French coast, which he visited. With the traditional conservatism of this country, many of the distinguished physicians and surgeons of the day opposed his innovations, but he prevailed. He thought that the best results could be obtained by having two conjoined establishments, one in the country, the other at the seaside. This plan was realized when his hospital opened a seaside branch. After the first world war he spent much of his time in traveling and lecturing. In 1926 he lectured in the United States and Canada, and in 1936 he received the Distinguished Service Gold Key of the American Congress of Physical Therapy. In 1935, when the British Medical Association met in Australia, he was president of the Section of Tuberculosis and Public Health.

Marriages

JOHN WINTHROP PENNOCK, Syraense, N. Y., to Mrs. Mary Farrand Hall of New York in Berkeley, Calif., February 9.

EDWARD JAMES MORTFLL, Oshkosh, Wis., to Miss Frances Carrington Ellis of Waynesboro, Va., December 16.

M. HERBERT BARKER to Miss Marjorie Leigh, both of Chicago, in Washington, D. C., in February.

CLINTON CHILDS HOPKIN JR., Pendleton, S. C., to Miss Rebecca Lane of Atlanta, Ga., December 17.

FRED CARLTON McCALL, Norton, Va., to Miss Evelyn Marguerite Carter of Farmville, January 1.

Deaths

Charles McDaniel Rosser ☉ Dallas, Texas, medical educator and organizer, died at the Gaston Hospital January 27, aged 83.

Dr. Rosser was born in Cuthbert, Ga., Dec. 24, 1862. He studied at the East Texas Academic Institute and graduated at the University of Louisville Medical Department in 1885. Fortified with an ambition to become a doctor of medicine, Dr. Rosser entered a junior clerkship in a Pittsburg, Texas, drugstore, where the owner, a physician, lent him books and periodicals for study. He later became a "traveling salesman" and school teacher to obtain money for further study. In his autobiography, "Doctors and Doctors," Dr. Rosser attributed much of his zeal to a country practitioner who took him for a companion during the progress of his learning "to see the practice of medicine from the inside." After his graduation Dr. Rosser started practice in Waxahachie, Texas, later moving to Dallas, where he soon became city health officer and superintendent of the North Texas Hospital for the Insane at Terrell. In 1900 he led a movement to establish a medical college in Dallas, which resulted in the organization of the Medical Department of the University of Dallas, now known as Baylor University School of Medicine, where for many years he served as professor of clinical surgery, later becoming emeritus. He was the founder of the Good Samaritan Hospital, which later became a teaching unit of Baylor.

Always an active organizer, Dr. Rosser was one of those instrumental in founding in 1906 the Medical Association of the Southwest, of which he was the first president. This association, covering the states of Missouri, Kansas, Arkansas, Oklahoma and Texas, was later taken over by the newer founded Southern Medical Association. He was also active in the creation of the Dallas Southern Clinical Society. He was once president of the North Texas Medical Association, of the Dallas County Medical Society, an officer of the Southern Surgical and Gynecological Association and chairman of the state board of health. Shortly after his graduation from medical school he became interested in the activities of the Texas State Medical Association, subsequently participating on committees and holding such offices as the vice presidency and presidency. In 1923, as the result of his energies as chairman of a council on legislation and public instruction of the state society, when he directed a statewide educational campaign against quackery, an amendment was added to the state medical practice act providing an injunction against illegal practitioners. In 1929 and 1931 Dr. Rosser was a member of the House of Delegates of the American Medical Association.

In 1923 at a public gathering he was presented with a silver loving cup to mark his contribution to state health. The occasion observed also the celebration of the opening of the Medical Arts Building in Dallas, a project promoted by a committee of which Dr. Rosser was chairman. In 1930 special ceremonies marked the presentation of a portrait to Baylor to pay tribute to its founder.

Ira Frank ☉ Highland Park, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1899; specialist certified by the American Board of Otolaryngology; member and in 1936-1937 president of the American Laryngological, Rhinological and Otolological Society; member of the American Academy of Ophthalmology and Otolaryngology, Chicago Medical Society, Institute of Medicine of Chicago, Chicago Laryngological and Otolological Society and the Society of Medical History of Chicago; corresponding member of the Société de Laryngologie des Hôpitaux de Paris; fellow of the American College of Surgeons; served as attending otolaryngologist at the Grant Hospital in Chicago and consulting otolaryngologist to the Michael Reese Hospital and the Sarah Morris Hospital for Children, Chicago; died January 20, aged 67, of coronary occlusion.

Sigmund Krumholz ☉ Chicago; University and Bellevue Hospital Medical College, New York, 1899; professor and chairman of the department of neurology, Cook County Graduate School of Medicine; formerly assistant and associate professor of neurology at Northwestern University Medical School; served as assistant of nervous and mental diseases at Rush Medical College and associate in nervous diseases at the West Side Dispensary of the United Hebrew Charities; member of the Chicago Neurological Society; on the staffs of the Cook County and Mount Sinai hospitals; consulting neurologist and psychiatrist at the Orthodox Jewish Old Peoples Home; died January 26, aged 73, of coronary thrombosis and coronary sclerosis.

William Freas Confair, Benton, Pa.; University of Pittsburgh School of Medicine, 1932; fellow of the American College of Physicians; member of the American Medical Association; interned at the U. S. Marine Hospital, Norfolk, Va.; served on the associate staffs of the Bloomsburg Hospital, Bloomsburg, and the Berwick Hospital, Berwick; commissioned a first lieutenant in the medical reserve corps of the U. S. Army June 9, 1932; began active duty as a captain on Dec. 26, 1940 and later became a major; honorably discharged because of physical disqualification, Oct. 25, 1943; died in the George F. Geisinger Memorial Hospital, Danville, January 14, aged 36, of cerebral hemorrhage.

Henry R. Boettcher ☉ Chicago; the Hahnemann Medical College and Hospital, Chicago, 1890; Harvey Medical College, Chicago, 1896; at one time associate in ophthalmology and instructor (extramural) in laryngology and otology at Rush Medical College; formerly on the staffs of the Illinois Charitable Eye and Ear Infirmary and the Central Free Dispensary; trustee, member and past president of the staff of the Englewood Hospital; eye surgeon for the Wabash Railroad; served as a director of the First National Bank of Englewood; died February 5, aged 78, of uremia and hypertensive heart disease.

Julius Ernest Lackner ☉ Chicago; Rush Medical College, Chicago, 1910; formerly on the faculty of his alma mater; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; served as president and secretary of the Chicago Gynecological Society; member of the Central Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; on the staffs of the Michael Reese Hospital and the Highland Park (Ill.) Hospital; died at his home in Highland Park, January 3, aged 57, of coronary thrombosis.

William Alfred Ackroyd ☉ Binghamton, N. Y.; Albany Medical College, 1913; served during World War I; member of the Endicott Johnson Medical Department; on the staff of the Wilson Memorial Hospital, Johnson City, where he died February 9, aged 58, of aneurysm of the aorta.

Walter S. Alexander, Fond du Lac, Wis.; the Hahnemann Medical College and Hospital, Chicago, 1898; died November 5, aged 71, of arteriosclerosis and nephritis.

Anna L. Allaben, Morristown, N. J.; New York Medical College and Hospital for Women, Homeopathic, New York, 1894; for many years president of the local board of health and school physician; on the staff of the All Souls Hospital, where she died January 2, aged 86, of myocarditis and carcinoma of the descending colon.

Ralph Willis Atwater ☉ Syracuse, N. Y.; Cornell University Medical College, New York, 1904; on the staff of the Crouse-Irving Hospital, where he died December 9, aged 63, of coronary thrombosis.

Caroline Marcy Baldwin, Rochester, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1901; member of the American Medical Association; died November 10, aged 65, of cerebral embolism and arteriosclerotic heart disease with auricular fibrillation.

Fredrick Dale Barker, Granville, Ohio; University of Pennsylvania Department of Medicine, Philadelphia, 1890; during World War I served overseas as a captain in the Red Cross; formerly chief of staff, Miami Valley Hospital, and division surgeon for the Baltimore and Ohio Railroad in Dayton; since 1914 trustee of Denison University; at one time chairman of the board of public works; developed a water system for Granville; died January 16, aged 84, of chronic myocarditis with anasarca.

Virgil F. Barker, Cincinnati; Medical College of Ohio, Cincinnati, 1900; served during World War I; died in the Cincinnati General Hospital January 9, aged 67, of cerebral thrombosis and hypertensive cardiovascular disease.

Albert Armington Barrows ☉ Providence, R. I.; Harvard Medical School, Boston, 1902; member of the New England Surgical Society; fellow of the American College of Surgeons; member of the founders group of the American Board of Surgery; on the courtesy staff, South County Hospital, Wakefield; consulting surgeon, Westerly Hospital, Westerly, and Providence City Hospital; died October 9, aged 66, of coronary occlusion.

Charles Barton, Los Angeles; Detroit Homeopathic College, 1909; served as assistant city health officer; served during World War I; died recently, aged 63.

Harry Baum, St. Joseph, Mo.; University Medical College of Kansas City, Mo., 1900; veteran of the Spanish-American War; died in the Missouri Methodist Hospital December 30, aged 64, of lobar pneumonia.

Edward C. Beek, St. Louis; St. Louis College of Physicians and Surgeons, 1896; on the staffs of the Deaconess Hospital, Josephine Heitkamp Memorial Hospital and the Alexian Brothers' Hospital, where he died January 4, aged 80, of carcinoma of the prostate, cerebral hemorrhage and pneumonia.

Robert Marvin Benson, Carrollton, Mo.; University Medical College of Kansas City, 1905; died January 3, aged 62, of cerebral hemorrhage.

Martin Biederman @ New York; Columbia University College of Physicians and Surgeons, New York, 1922; on the staffs of St. Elizabeth's Hospital, Gouverneur Hospital and St. Clare's Hospital, where he died January 7, aged 46, of bronchopneumonia.

Junius S. Billings, White Hall, Ill.; American Medical College, St. Louis, 1896; member of the American Medical Association; died January 13, aged 77, of cerebral hemorrhage.

Oscar W. Bonner, Delaware, Ohio; Columbus Medical College, 1892; member of the draft board during World War I; formerly member of the board of health; died December 11, aged 74.

Alfred Joseph Bonneville @ Hatfield, Mass.; College of Physicians and Surgeons, Boston, 1904; Medico-Chirurgical College of Philadelphia, 1911; district supervising censor of the Massachusetts Medical Society for many years; on the staff of the Cooley Dickinson Hospital, Northampton, where he died January 11, aged 73, of heart disease.

Josiah Slicer Bowen, Baltimore; University of Maryland School of Medicine, Baltimore, 1903; served as deputy state health officer of the state department of health and as head of the Baltimore County Health Department; past president of the Medical and Chirurgial Faculty of Maryland; died October 20, aged 62, of coronary thrombosis.

William W. Bowen, Fort Dodge, Iowa; State University of Iowa College of Medicine, Iowa City, 1895; fellow of the American College of Surgeons; formerly vice president and in 1933 president of the Iowa State Medical Society; past president of the Webster County Medical Society, Iowa X-Ray Club and the Austin-Flint and Twin Lakes Medical Societies; member of the staffs of the Lutheran Hospital and St. Joseph Mercy Hospital, where he died December 20, aged 75, of cerebral arteriosclerosis and progressive cerebral thrombosis.

Daniel W. Bowers, Calhoun, Ill.; Barnes Medical College, St. Louis, 1895; died in the Olney Sanitarium, Olney, January 16, aged 83, of carcinoma of the urinary bladder.

Harvey Christian Bowers, Akron, Ind.; St. Louis University School of Medicine, 1902; died in St. Joseph Memorial Hospital, Kokomo, February 11, aged 70, of injuries received when the automobile in which he was driving was struck by a truck.

Claude McKinley Burpee @ Augusta, Ga.; University of Georgia School of Medicine, Augusta, 1922; professor of pediatrics at his alma mater; member of the American Academy of Pediatrics; specialist certified by the American Board of Pediatrics, Inc.; formerly served an internship and residency at St. Louis Children's Hospital; pediatrician in chief at the University Hospital, where he had served as intern and resident; died December 2, aged 47, of coronary thrombosis.

George Verne Buxton, Milwaukee; University of Arkansas School of Medicine, Little Rock, 1927; served during World War I and on the staffs of various Veterans Administration facilities; died November 21, aged 51, of cerebral hemorrhage and hypertension.

Omer U. Carl @ Peru, Ind.; Miami Medical College, Cincinnati, 1896; served for two terms as a member of the school board; on the staff of the Dukes-Miami County Memorial Hospital, where he died January 14, aged 72, of perforated gastric ulcer.

John J. Cavanaugh @ Fort Scott, Kan.; John A. Creighton Medical College, Omaha, 1898; died in St. Elizabeth's Hospital, Hutchinson, January 28, aged 76, of coronary thrombosis.

Lee Roy Colby, Norborne, Mo.; Missouri Medical College, St. Louis, 1899; died January 7, aged 87, of cerebral hemorrhage.

Norman V. Collins, Griffin, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1910; died November 24, aged 55.

George Henry Joseph Copia, Chicago; Loyola University School of Medicine, Chicago, 1918; on the staff of St. Bernard's Hospital, where he died January 31, aged 50, of coronary thrombosis and hypertension.

Thomas Benton Cox, Lawndale, Calif.; Baltimore Medical College, 1894; died December 24, aged 77.

George Anderson Crafton, Fulton, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1913; member of the American Medical Association; served during World War I; died December 17, aged 56.

William Clapp Cuthbert @ Hudson Falls, N. Y.; Albany Medical College, 1897; for many years coroner of Washington County; health officer of the town of Kingsbury; formerly on the staff of the Glens Falls Hospital, Glens Falls, where he died January 14, aged 71, of coronary thrombosis.

Ernest Napoleon D'Aleorn @ Muskegon, Mich.; University of Illinois College of Medicine, Chicago, 1922; fellow of the American College of Surgeons; past president of the Muskegon County Medical Society; on the staff of the Mercy Hospital; interned at the Metropolitan Hospital, Welfare Island, N. Y., and at the Hackley Hospital, at whose school of nursing he lectured and where he was a staff member and where he died January 19, aged 48, of carcinoma of the sigmoid.

Thomas Stevenson Dunning, Philadelphia; Hahnemann Medical College of Philadelphia, 1870; formerly on the staff of the Children's Homeopathic Hospital; on Jan. 10, 1940 had been honored by the Dickinson Club of Philadelphia as the oldest living alumnus of Dickinson College, having graduated in 1867; died January 12, aged 96.

William Murray Edmonds, Tonawanda, N. Y.; University of Buffalo School of Medicine, 1916; served overseas during World War I; for many years member of the board of health; member of the staff of the DeGraff Memorial Hospital, North Tonawanda; died January 11, aged 54, of coronary occlusion, chronic asthma and pulmonary emphysema.

George Potter Edwards, Myrtle Point, Ore.; University of Georgia Medical Department, Augusta, 1902; served as acting assistant surgeon in the U. S. Public Health Service; died in December, aged 76.

Harry Bennett Felts @ Salt Lake City; Rush Medical College, Chicago, 1907; also a pharmacist; served during World War I; on the staff of St. Mark's Hospital; died in the Holy Cross Hospital January 14, aged 65, of coronary occlusion.

Edward Newton Flowers, Clarksburg, W. Va.; College of Physicians and Surgeons, Baltimore, 1893; member of the American Medical Association and honorary member of the West Virginia State Medical Association; honorary member and past president of the Harrison County Medical Society; for many years a member of the school board; one of the founders of the Harrison County Hospital, now known as St. Mary's Hospital; died January 25, aged 78, of cerebrovascular arteriosclerosis and bronchopneumonia.

John Albert Flury @ St. Louis; Washington University School of Medicine, St. Louis, 1912; served during World War I; formerly on the staff of the Deaconess Hospital; died in Colorado Springs, Colo., January 9, aged 58, of heart disease.

James I. Foster, Huntsville, Tenn.; Tennessee Medical College, Knoxville, 1901; member of the American Medical Association; for many years county health officer; died December 8, aged 69.

Jacob H. Garey, Berlin, Pa.; Jefferson Medical College of Philadelphia, 1885; died in the Somerset Community Hospital, Somerset, November 9, aged 93, of hypertrophy of the prostate and chronic cystitis.

Montgomery G. Gearhart @ Millerstown, Pa.; University of the South Medical Department, Sewanee, Tenn., 1901; died January 16, aged 72, of coronary occlusion.

Ludie Thamil Gilmer @ Milwaukee; Meharry Medical College, Nashville, Tenn., 1918; died January 12, aged 51, of carcinoma of the stomach.

P. M. Girard, Lafayette, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1882; on the staff of the Lafayette Sanitarium; died December 11, aged 85.

Warren D. Gray, Mason, Tenn.; Memphis Hospital Medical College, 1884; died December 17, aged 79.

James Harry Hendren, Balkan, Ky.; Hospital College of Medicine, Louisville, 1902; served as secretary of the Cumberland Valley Medical Association; died in the Middlesboro Hospital, Middlesboro, December 16, aged 71.

Oscar Henry Henninger, Ironton, Ohio; Pulte Medical College, Homeopathic, Cincinnati, 1909; member of the American Medical Association; for many years a member of the city council; served overseas during World War I; on the staff of the Lawrence County General Hospital; surgeon, Mount Vernon Bridge Company; died December 26, aged 58, of coronary occlusion and chronic myocarditis.

Claiborne Steele Hyland, Yokena, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1894; died in Vicksburg December 22, aged 85.

Jay Arthur Jones, Kansas City, Kan.; College of Physicians and Surgeons, Medical Department, Kansas City University, Kansas City, 1904; member of the American Medical Association; past president and secretary of the Wyandotte County Medical Society; died in the Bethany Hospital December 26, aged 65.

Nathaniel Aloysius Jones, Oklahoma City; Baylor University College of Medicine, Dallas, Texas, 1940; interned at the Toledo Hospital, Toledo, Ohio, and the Brackenridge Hospital, Austin, Texas; reported for active duty as a captain in the medical corps, Army of the United States, on May 14, 1942 and was honorably discharged by reason of physical disqualification on Oct. 3, 1943; died in November, aged 28.

Joseph R. Keller, Sulphur, Okla. (licensed in Oklahoma under the Act of 1908); died November 9, aged 75.

Ellis W. Kelly, Toledo, Ohio; Toledo Medical College, 1897; on the staffs of the Flower Hospital, Women's and Children's Hospital, Toledo Hospital and St. Vincent's Hospital, where he died December 19, aged 76.

Melvin Edwin Koenig, Buffalo; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1931; served an internship at the Moses Taylor Hospital, Lackawanna, N. Y.; examining physician for the Bethlehem Steel Company; began active duty as a first lieutenant in the medical corps, Army of the United States, on Feb. 25, 1944; received a medical discharge for physical disability on Dec. 4, 1944; died in the Meyer Memorial Hospital December 12, aged 38.

Irving Nelson Kohler, Middleport, N. Y.; University of Buffalo School of Medicine, 1912; member of the American Medical Association; health officer of the town of Hartland; died December 29, aged 69, of coronary occlusion.

Bertram Oliver Kreilick, Fremont, Ohio; Ohio Medical University, Columbus, 1907; for twenty-two years a member and for nineteen years president of the school board; on the staff of the Memorial Hospital, where he died December 30, aged 61, of coronary thrombosis.

John V. Lewis, Momence, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1895; at one time mayor of Momence; died in the Manteno State Hospital, January 3, aged 77, of cerebral anemia and coronary sclerosis.

Irving Phillips Lyon, Buffalo; Johns Hopkins University School of Medicine, Baltimore, 1897; an Affiliate Fellow of the American Medical Association; formerly associate professor of medicine and librarian at the University of Buffalo School of Medicine; member of the American Association of Pathologists and Bacteriologists; served during World War I; for many years on the staff of the Buffalo General Hospital and Buffalo City Hospital; died November 11, aged 74.

William Dunsford Lyon, Andalusia, Ala.; Western Reserve University Medical Department, Cleveland, 1900; specialist certified by the American Board of Pediatrics, Inc.; member of the American Academy of Pediatrics; formerly pediatric consultant to the bureau of maternal and child health of the state department of health; at one time health officer of Grass Lake, Mich., and assistant in pediatrics at the University of Michigan Medical School, Ann Arbor; died in Tucumcari, N. M., December 9, aged 69.

Charles Elmer Magoun, Sioux City, Iowa; Tufts College Medical School, Boston, 1915; member of the American Medical Association; served during World War I; died in Salem, Va., December 18, aged 56.

Benjamin Harry Mann, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1907; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology and the Association for Research in Ophthalmology, Inc.; fellow of the American College of Surgeons; ophthalmologist at the Methodist Hospital; died in the Graduate Hospital November 22, aged 58.

William Richard McAtee, Eric, Pa.; University of Buffalo School of Medicine, 1930; interned at the Hamot Hospital, where he died November 9, aged 40, of heart disease.

Charles Stanhope Means, Fort Smith, Ark.; University of Arkansas School of Medicine, Little Rock, 1909; member of the American Medical Association; past president of the Sebastian County Medical Society; died November 21, aged 63.

William Alvie Moffitt, Paducah, Ky.; University of Louisville Medical Department, 1903; died in the Riverside Hospital November 25, aged 72, of chronic myocarditis.

Cora Weber Negus, Keswick, Iowa; State University of Iowa College of Medicine, Iowa City, 1906; member of the American Medical Association; died November 14, aged 76.

Isaac Eugene Nervig, Sioux City, Iowa; State University of Iowa College of Medicine, Iowa City, 1902; fellow of the American College of Surgeons; served during World War I; died in Knoxville December 24, aged 70.

John William Noble, Allentown, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1919; formerly deputy coroner and medical examiner at induction center; on the staffs of the Allentown and Sacred Heart hospitals; died January 3, aged 49, of uremia and hypertensive vascular disease.

John Coleman O'Gwynn, Mobile, Ala.; University of Tennessee Medical Department, Nashville, 1902; member of the American Medical Association; served during World War I; formerly associated with the U. S. Public Health Service; consultant on the staff of the U. S. Marine Hospital; died January 13, aged 65, of heart disease.

Harold Francis Parker, Waukesha, Wis.; Tufts College Medical School, Boston, 1909; awarded the Purple Heart for wounds received in action during World War I; clinical director of the Veterans Administration Facility; died in the Veterans Administration Facility, Wood, January 13, aged 62, of thrombosis of the left median cerebral artery with right hemiplegia and bulbar paralysis.

Harry Caldwell Parker, Gulfport, Fla.; Harvard Medical School, Boston, 1901; at one time instructor in ophthalmology at the Tufts College Medical School and on the staffs of the Massachusetts Charitable Eye and Ear Infirmary and St. Elizabeth's Hospital, all in Boston; served during World War I; died in the Veterans Administration Facility, Bay Pines, January 11, aged 67, of carcinoma of the left lung.

David H. Parmet, Allentown, Pa.; Jefferson Medical College of Philadelphia, 1909; served as vice president of the Lehigh County Medical Society; on the staff of the Sacred Heart Hospital; died January 4, aged 64, of cerebral hemorrhage.

Frank Herbert Paterson, Santa Ana, Calif.; College of Physicians and Surgeons of San Francisco, 1898; served during World War I; at one time affiliated with the Columbia Hospital in San Jose; died January 3, aged 69, of pneumonia and encephalitic parkinsonism.

Claude Burton Paynter, Salem, Ind.; Louisville (Ky.) Medical College, 1906; member of the American Medical Association; organized the Washington County chapter of the American Red Cross in 1917, serving as its president; a lieutenant in the medical corps, 70th Field Artillery, during World War I; secretary and past president of the Washington County Medical Society; served as county coroner and as city and county health officer; acting surgeon for the Monon Railway Company; died January 8, aged 68, of angina pectoris.

William H. Perry, Flint, Mich.; Homeopathic Medical College of Missouri, St. Louis, 1898; died in the Hurley Hospital January 11, aged 75, of coronary thrombosis.

Alvin August Peterson, Mora, Minn.; Northwestern University Medical School, Chicago, 1916; died January 13, aged 53, of cerebral hemorrhage due to hypertension.

Charles LaFayette Plunkett, New York; Medical College of Virginia, Richmond, 1925; died in a local hospital in November, aged 46.

William H. F. Rhyne, LaFayette, Ga.; Vanderbilt University School of Medicine, Nashville, Tenn., 1891; University of Nashville Medical Department, 1891; died December 1, aged 81.

Joseph Rosenberg, New York; Long Island College Hospital, Brooklyn, 1909; past president of the Harlem Medical Association; formerly on the staffs of the West Side German, Mount Sinai, Lenox Hill, Sydenham, Jewish Memorial and Riker's Island hospitals; for many years director of the Jewish Social Service Association; examining physician for the Merchant Marine Service during World War I; died December 7, aged 68, of leukemia.

Guy Victor Rukke, Colonel, U. S. Army, retired, Monterey, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1904; Army Medical School, 1907; entered the medical corps of the U. S. Army as a first lieutenant in 1907; promoted to captain in 1910, major in 1916, lieutenant in 1927 and retired with the rank of colonel June 30, 1933 for disability in line of duty; fellow of the American College of Surgeons; died in the Peninsula Community Hospital, Carmel, Calif., Nov. 16, 1943, aged 67.

Shibly Nassif Sallume, Albion, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1907; died in the James W. Sheldon Memorial Hospital January 12, aged 65, of cerebral hemorrhage.

Sarah Elizabeth Anna Schetky, Hood River, Ore.; Woman's Medical College of Pennsylvania, Philadelphia, 1900; died January 3, aged 83, of heart disease.

Jacob Everett Shearer, Phoenix, Ariz.; American Medical College, St. Louis, 1895; served during World War I; formerly health officer of Tillamook County, Ore.; served on the staffs of various Veterans Administration facilities; died December 13, aged 75, of coronary occlusion and arteriosclerosis.

Harlan Daniel Sheldon, Chicago; Bennett Medical College, Chicago, 1910; died February 4, aged 63, of chronic myocarditis and coronary occlusion.

Eugene Pardon Sisson @ New Haven, Conn.; Harvard Medical School, Boston, 1918; member of the American Academy of Pediatrics and the Kansas Medical Society; assistant in the department of university health, Yale University; died January 27, aged 51, of purpura hemorrhagica.

Clinton H. Smith, Big Spring, Neb.; Lincoln Medical College, Eclectic, 1916; served as physician for the Union Pacific Railroad for many years; died December 29, aged 61.

Langdon Trufant Snipe @ Bath, Maine; College of Physicians and Surgeons, New York, 1893; past president of the Maine Medical Association; on the staff of the Bath Memorial Hospital; served as bank president; died December 13, aged 77, of carcinoma of the sigmoid with metastasis to the liver.

Law Erskine Somers @ Fort Wayne, Ind.; Indiana University School of Medicine, Indianapolis, 1917; died January 22, aged 56, of coronary heart disease.

Harold Carold Soucey @ Fresno, Calif.; College of Medical Evangelists, Loma Linda and Los Angeles, 1928; died December 25, aged 50.

Annie Whitney Spencer, Batavia, Ill.; the Hahnemann Medical College and Hospital, Chicago, 1896; first woman president of the Illinois Homeopathic Medical Association in 1920; on the staff of the Bellevue Place Sanitarium, where she died December 18, aged 85.

James Malcolm Stallard, Sparta, Ky.; Kentucky School of Medicine, Louisville, 1898; died December 19, aged 74.

Lester Miles Stearns @ San Diego, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; fellow of the American College of Surgeons; at one time instructor of anatomy at his alma mater; formerly on the staff of the Oak Park Hospital, Oak Park, Ill.; associated with the Consolidated Vultee Aircraft Corporation; died in the Scripps Memorial Hospital, La Jolla, January 4, aged 61, of meningitis.

James R. Stodghill, Lineville, Ala.; Southern Medical College, Atlanta, Ga., 1881; also a minister; died in December, aged 88.

Dwight Harold Stoughton @ Hartford, Conn.; McGill University Faculty of Medicine, Montreal, Que., 1918; president and treasurer of the D. G. Stoughton Company, operators of drug stores in Hartford and West Hartford; died December 16, aged 52.

Francis Joseph Talbot @ Niagara Falls, N. Y.; Baltimore Medical College, 1911; served during World War I; associate Fellow of the American College of Physicians; physician to Niagara University; psychiatrist, State of New York Department of Mental Hygiene; medical director, child welfare, and medical inspector, department of education; member of staffs of the Niagara Falls Memorial and Mount St. Mary's hospitals; medical examiner, Lehigh Valley Railroad; died in St. Joseph's Hospital, Buffalo, November 11, aged 58.

Van der Veer Taylor, Xenia, Ohio; Medical College of Ohio, Cincinnati, 1896; died January 13, aged 78, of cerebral hemorrhage.

William Ellwood Tew @ Bessemer, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; for many years a member of the Michigan State Board of Registration in Medicine; served as president of the Upper Peninsula Medical Society; died December 25, aged 64.

Isaac Walton Thorne, San Francisco; Cooper Medical College, San Francisco, 1896; at one time instructor in surgery at his alma mater; member of the American Medical Association; past president and many times a member of the board of directors of the San Francisco County Medical Society; fellow of the American College of Surgeons; for many years chief surgeon at Mary's Help Hospital, where he died December 23, aged 72, of coronary obstruction.

Flora V. Woodward Tibbits, Boyne City, Mich.; the Hahnemann Medical College and Hospital, Chicago, 1906; died in Charlevoix January 4, aged 74, of organic heart disease.

E. A. Titel, Greenleaf, Wis.; Milwaukee Medical College, 1905; member of the American Medical Association; died in St. Vincent's Hospital, Green Bay, December 26, aged 68, of cardiac embolism and coronary sclerosis.

John Van Doorn, Marion, N. Y.; University of Buffalo School of Medicine, 1895; member of the American Medical Association; for many years coroner of Wayne County and health officer of Marion; died in Fairport, January 13, aged 77, of carcinoma of the lung.

Arthur Ward Van Riper @ Passaic, N. J.; College of Physicians and Surgeons, New York, 1895; instructor in pediatrics at the New York Post-Graduate Medical School, New York, 1922-1923; for many years associated with the board of health; honorary member of the New Jersey Medical Society; president of the medical staff and senior staff pediatrician at the Passaic General Hospital, where he died December 22, aged 74, of chronic valvular heart disease.

John Asa Walker, Shawnee, Okla.; St. Louis College of Physicians and Surgeons, 1897; member of the American Medical Association and in 1910 member of the House of Delegates; past president of the Pottawatomie County Medical Society and for many years a member of the board of censors; formerly councilor of the Seventh District of the Oklahoma State Medical Association; served during World War I; on the staff of the Shawnee City Hospital; died December 25, aged 78, of intestinal obstruction.

Powhatan M. Waltrip Sr., Fort Worth, Texas; University of Louisville Medical Department, Louisville, Ky., 1898; died in St. Joseph's Hospital December 29, aged 70, of pneumonia and cerebral hemorrhage.

Emil Henry Webster @ Sault Ste. Marie, Mich.; Trinity Medical College, Toronto, Ont., Canada, 1890; died January 19, aged 75, of chronic myocarditis and cerebral hemorrhage.

Albert Robert Weinglass, Chicago; University of Illinois College of Medicine, Chicago, 1941; interned at the Epworth Hospital in South Bend, Ind., and the Chicago Memorial Hospital; served an internship and fellowship in metabolism at the Michael Reese Hospital; research fellow in medicine at Harvard Medical School, Boston; teacher at the Thorndike Memorial Laboratory and resident in pathology at the Boston City Hospital, where he died January 3, aged 27, of diabetes mellitus.

Samuel Bernard Weiner @ New York; Long Island College of Medicine, Brooklyn, 1934; specialist certified by the American Board of Pediatrics, Inc.; formerly resident in pediatrics at the Strong Memorial Hospital, Rochester, N. Y.; served an internship, a residency in pediatrics and as adjunct pediatrician at the Mount Sinai Hospital, where he died November 22, aged 33.

Hugh Judson Westgate, Rhinelander, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1909; member of the American Medical Association; died January 2, aged 69, of coronary occlusion.

Malcolm Mackenzie Wickware, Detroit; Detroit College of Medicine, 1897; medical director of the Gleaner Life Insurance Society; died in the Highland Park General Hospital, Highland Park, December 9, aged 74.

George Thomas Williams @ Crawfordsville, Ind.; Medical College of Indiana, Indianapolis, 1887; served during World War I; member of the medical staff of Culver Hospital, where he died, December 20, aged 79, of cerebral hemorrhage due to cardiorenal vascular disease.

Edwin G. Wilson, Jackson, Mich.; Michigan College of Medicine and Surgery, Detroit, 1903; member of the American Medical Association; died in New Port Richey, Fla., January 12, aged 67, of acute left ventricular cardiac failure and coronary thrombosis.

Adelaide Woodward, Seattle; Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1902; for her many years of service as a medical missionary in India was decorated by King George V of England; died January 7, aged 70.

Charles Edward Wright, Clear Lake, Iowa; State University of Iowa College of Medicine, Iowa City, 1898; member of the American Medical Association; died in Rose Hill December 21, aged 83, of carcinoma of the stomach.

Anna Rand Young, Stamford, Conn.; Tufts College Medical School, Boston, 1905; contract surgeon in the Office of the Surgeon General at Washington and director of U. S. Army laboratory technicians during World War I; died in the Stamford Hospital January 7, aged 70, of coronary disease.

Bureau of Investigation

BACKWARD GOES "SERUTAN"

Federal Trade Commission Calls Halt on the Advertising Claims

If you read it backward, "Serutan" is "Nature's"; its promoters apparently would have you believe that it is nature's way of curing constipation, giving you new life and "pep." Since 1935, and perhaps longer, Serutan has, in a manner of speaking, been getting into the public's hair, and perhaps, in a good many instances, also into its stomach and intestine.

An early advertising circular claimed: "Serutan is approved by such eminent authorities as . . . Victor H. Lindlahr." A picture of Lindlahr was associated with the somewhat amazing statement: "Eighteen years of study and investigation in the problems of health and disease give him a background which makes him peculiarly adapted for the great service he is now rendering countless thousands by his daily radio message on healthful living."

Where did Victor H. Lindlahr put in his "eighteen years of study and investigation in the problems of health and disease"? A search through the American Medical Association's exhaustive biographic records fails to show that he ever obtained a license to practice medicine in any state in the Union. The now defunct St. Louis College of Physicians and Surgeons reported him as one of its graduates in the class of 1917, though a picture of the class of 1923 included a person designated as "V. H. Lindlahr"! Regardless of which date is correct, his diploma from that school is no credit to him; the institution had an unsavory reputation long before it figured in the "diploma mill" scandal of 1923, after which its charter was revoked.

The records further show that the Chicago College of Osteopathy bestowed a diploma on Lindlahr in 1918 and that the state of Illinois granted him a license to practice osteopathy in the same year. As a dabbler in another field of "science" he obtained a license to practice "natureopathy" in Connecticut in 1931, but less than a year afterward that state revoked the license when the attorney general ruled that Lindlahr had not fulfilled the educational requirements for such license.

Some of Lindlahr's advertising that circulated in 1932 declared: "He was for six years chief of staff of the Lindlahr Sanitarium and is recognized as one of America's leading drugless physicians." Recognized by whom?

Besides the so-called Lindlahr Sanitarium, there was the high-sounding "Lindlahr College of Natural Therapeutics." These schools, appear to have been devoted to a variety of medical fads and were shepherded largely by Victor's father, Henry Lindlahr, M.D., possessor of a diploma from a "medical university" of dubious standing. After the father's death in 1924 the institutions were sold. The records indicate that for a time Victor remained in Chicago, giving "health lectures" and running a "health food" store and restaurant in Chicago. The scene next shifted to New York, where Victor took up the promotion of "patent medicines," apparently beginning with "Edrolax" and going on to "Kal," which was advertised as a calcium accessory to the diet. The government ruled that Kal was sold under fraudulent claims. Then Lindlahr found other nostrums to boost, such as "Hood-Lax" and "Serutan."

In New York Lindlahr also extended his "medical" activities to the literary field. First, it seems, he was president of a concern known as Lindlahr's Magazine, Inc. In 1932, the records indicate, the name was changed to Modern Living, Inc. This concern published a health-fad magazine, *Modern Living*, which Lindlahr was said to have edited until he organized another one of like nature, called the *Journal of Living*.

According to the Federal Trade Commission, Lindlahr has been employed by Healthaids, Inc., Jersey City, N. J., present manufacturer and distributor of Serutan, as a "health lecturer," actively promoting the sale of this nostrum to the public and receiving compensation from the company and the *Journal of Living Publishing Corporation*. Further, the Commission reported that Lindlahr is a director of the publishing concern, as are also two other persons, who are officers of the Healthaids outfit.

In October 1940 the Commission issued a complaint against Healthaids, Inc., the *Journal of Living* and its editor, Victor H. Lindlahr, for making misrepresentations for Serutan through advertisements in newspapers, periodicals, circulars and radio broadcasts.

In their reply the respondents denied that they had made the misrepresentations charged against them or that Lindlahr directs and controls the practices of Healthaids, Inc., and the *Journal of Living Publishing Corporation* with respect to the advertising of its preparations or otherwise, or that the respondents had acted in conjunction and cooperation with each other in carrying out the practices alleged in the complaint.

The case was submitted to hearings held intermittently over a period of years. Now it seems to have reached its conclusion in a Cease and Desist Order issued in January 1945 by the Commission. This directs the respondents to stop disseminating "any advertisement which represents directly or indirectly that Serutan (1) is a cure or remedy for constipation, will restore or maintain natural elimination, will promote normal or regular action by the digestive or eliminative organs or muscles, or has any therapeutic value in the treatment of constipation in excess of the temporary relief afforded by its laxative action; (2) will strengthen the digestive or eliminative organs or muscles; or (3) will stimulate the digestive or eliminative organs or muscles. (This last prohibition is not to be construed as prohibiting representations that Serutan tends to stimulate peristaltic action by the intestines.)"

With these misrepresentations barred from the advertising, how will the promoters of Serutan be able to sell enough to make it profitable? The Commission's order brought out the information that the nostrum consists of equal parts of rice polishings and the epithelial tissue of psyllium seed. Instead of its being a cure for constipation, its therapeutic value is "limited to the temporary relief afforded by its laxative action."

When taken as directed, Serutan acts as a mild irritant, bulk laxative. . . . A small portion of the indigestible residues of Serutan is broken down into volatile fatty acids which irritate the intestinal walls. The crude fibers contained in the rice polishings also have a direct irritant effect upon the intestinal walls. . . .

This case is not the first action that the Federal Trade Commission has brought against Lindlahr and the *Journal of Living Publishing Corporation*. In 1943 it ordered them and Purity Products, Inc., distributors, to cease disseminating any advertisement which represented, among other things, that the product "V-Bev" had any value in the treatment of arthritis, nervousness, indigestion, sleeplessness, lack of energy, underweight or general run-down condition, or of any disease or condition caused by or associated with a vitamin B₁ deficiency.

Healthaids, Inc., individually, had a run-in with the Food and Drug Administration in 1934, when the latter seized an interstate shipment of the firm's "Lax-Aid" on the charge that the labels falsely represented, among other things, that this was not a seed product, whereas analysis had shown it to consist essentially of ground plantago seeds. Further, the government charged that the label fraudulently represented that the nostrum, by doing away with constipation, would thereby remove the cause of rheumatism, pyorrhea, diseased tonsils, colitis and "many other life-taking diseases." Healthaids, Inc., put up no defense in this case.

The airing of the decision in the Serutan case may cause many of the public to speculate as to how much they can believe of medical claims made over the radio. Nostrum promotion in newspaper and magazine advertising columns in the past has been flagrant; much of it still is. Over the radio the public today often hears the most preposterous claims in the field of medication, presented by the seductive voices of those who pretend to speak with authority. The owners of Serutan sponsored a widely known newspaper columnist and radio commentator named Drew Pearson. Persons who cherish respectability should be expected to assure themselves of the reliability of their sponsorship, particularly when the health of the people is so directly concerned. Mr. Pearson so persistently refuses to correct misstatements of fact related to medicine when made in his newspaper column that it would apparently be futile to expect him to comment on the present state of knowledge regarding his former sponsor on the radio.

Correspondence

SUMMARY AND CONCLUSIONS

To the Editor:—This communication is to protest against a growing tendency among medical authors publishing papers in certain journals to append an incomplete table of contents and label it Summary and Conclusions. Thus:

1. The literature covering the important subject of whether two and two make four is thoroughly reviewed.
2. Certain evidence more or less bearing on this important subject is presented.
3. The significance of these findings is discussed.
4. Read it, you — —.

The journals published by the American Medical Association do not insist in this way and I know your teaching has been against it.

Yours for better summaries and conclusions.

TASKER HOWARD, M.D., Brooklyn.

ANTIMONY THERAPY IN CREEPING ERUPTION

To the Editor:—Dr. Dudley C. Smith's article in THE JOURNAL, Nov. 13, 1943, page 694, hardly called for a reply, as the literature to which he referred obviously was a limited one; but, as the article has given rise to the claim that antimony products other than fuadin have proved unsuccessful in the treatment of creeping eruption, may I refer you to early reports on their use appearing in various quarters and prompting my own warning, to which he referred, that not all cases respond to antimony therapy and may therefore not have the same causative organism:

Cawston F. Gordon: *J. Roy. Army M. Corps*, December 1929.

Cawston, F. Gordon: *J. Trop. Med. & Hyg.*, Aug. 15, 1928, pp. 209, 210.

F. G. CAWSTON, Durban, South Africa.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Injury to Anesthetized Patient; Application of the Doctrine of Res Ipsa Loquitur.—The patient submitted to an appendectomy on Oct. 28, 1939 at a hospital owned by Dr. Swift. After he was wheeled to the operating room, according to the plaintiff, the anesthetist pulled his body to the head of the operating table, laying him back against two hard objects at the top of his shoulders, about an inch below his neck. The patient was then anesthetized and lost consciousness. When he came out of the anesthetic the following morning he felt a sharp pain about half way between his neck and his right shoulder, and diathermy treatments were given him for this pain while he remained in the hospital. The pain did not subside but spread down to the lower part of his arm, growing worse after his release from the hospital. He was unable to rotate or lift his arm and developed paralysis and atrophy of the muscles around his shoulder. According to another physician who subsequently treated him for this ailment, roentgenograms indicated an area of diminished sensation below the shoulder and atrophy and wasting away of muscles around the shoulder and, in the opinion of this physician, the patient's condition was due to trauma or injury by pressure or strain applied between his right shoulder and neck. Another physician, who had examined the patient probably for the purpose of testifying, testified that the patient's injury was a paralysis of traumatic origin, not arising from pathologic causes and not systemic, and that the injury resulted in atrophy, loss

of use and restriction of motion of the right arm and shoulder. Subsequently the patient brought suit against the operating physician, the anesthetist, the physician who owned the hospital at which the operation was performed, and the special nurse who attended him. At the conclusion of the evidence the trial court entered a nonsuit as to all the defendants, and the patient appealed eventually to the Supreme Court of California.

The patient contended that the evidence adduced by him at the trial court, substantially as stated, presented a proper case for the application of the doctrine of *res ipsa loquitur* and that the inference of negligence arising from the application of that doctrine made the entering of a nonsuit improper. The defendants, however, argued that, assuming the patient's condition was in fact the result of injury, there was no showing that the act of any particular defendant, or any particular instrumentality, was the cause thereof. Briefly stated, they defended on two theories: (1) that where there are several defendants and there is a division of responsibility in the use of an instrumentality causing the injury, and the injury might have resulted from the separate act of either one of two or more persons, the rule of *res ipsa loquitur* cannot be invoked against any one of them; and (2) that where there are several instrumentalities, and no showing is made as to which caused the injury or as to the particular defendant in control of it, the doctrine cannot apply. The doctrine of *res ipsa loquitur*, said the court, has three conditions: "(1) The accident must be of a kind which ordinarily does not occur in the absence of some one's negligence; (2) it must be caused by an agency or instrumentality within the exclusive control of the defendants; (3) it must not have been due to any voluntary action or contribution on the part of the plaintiff." Prosser, Torts, p. 295. It is applied in a wide variety of situations, including cases of medical or dental treatment and hospital care. There is, however, some uncertainty as to the extent to which the doctrine may be invoked in cases of injury from medical treatment. This is in part due to the tendency in some decisions to lay undue emphasis on the limitations of the doctrine and to give too little attention to its basic underlying purpose. The result has been that a simple, understandable rule of circumstantial evidence, with a sound background of common sense and human experience, has occasionally been transformed into a rigid legal formula, which arbitrarily precludes its application in many cases in which it is most important that it should be applied. If the doctrine is to continue to serve a useful purpose, we should not forget that "the particular force and justice of the rule, regarded as a presumption throwing upon the party charged the duty of producing evidence, consists in the circumstance that the chief evidence of the true cause, whether culpable or innocent, is practically accessible to him but inaccessible to the injured person." 9 Wigmore, Evidence, ed. 3, sec. 2509, p. 382; see also *Whetstone v. Moravec*, 228 Iowa 352, 291 N. W. 425; *Ross v. Double Shoals Cotton Mills*, 140 N. C. 115, 52 S. E. 121, 1 L. R. A., N. S. 298; *Maki v. Murray Hospital*, 91 Mont. 251, 7 P. (2d) 228. In the Maki case, in which an unconscious patient in a hospital received injuries from a fall, the court declared that without the doctrine the maxim that for every wrong there is a remedy would be rendered nugatory "by denying one, patently entitled to damages, satisfaction merely because he is ignorant of facts peculiarly within the knowledge of the party who should, in all justice, pay them."

The present case, continued the court, is of a type that comes within the reason and spirit of the doctrine more fully perhaps than any other. The passenger sitting awake in a railroad car at the time of a collision, the pedestrian walking along the street and struck by a falling object or the debris of an explosion, are surely not more entitled to an explanation than the unconscious patient on the operating table. Viewed from this aspect, it is difficult to see how the doctrine can, with any justification, be so restricted in its statement as to become inapplicable to a patient who submits himself to the care and custody of doctors and nurses, is rendered unconscious and receives some injury from instrumentalities used in his treatment. Without the aid of the doctrine a patient who received permanent injuries of a serious character, obviously the result of some one's negligence, would be entirely unable to recover unless the doctors and nurses in attendance voluntarily chose to disclose the identity of the negligent person and the facts establishing liability. See

Maki v. Murray Hospital, 91 Mont. 251, 7 P. (2d) 228. If this were the state of the law of negligence, the courts, to avoid gross injustice, would be forced to invoke the principles of absolute liability, irrespective of negligence, in actions by persons suffering injuries during the course of treatment under anesthesia. But we think this juncture has not yet been reached and that the doctrine of *res ipsa loquitur* is properly applicable to the case before us. The condition that the injury must not have been due to the plaintiff's voluntary action is of course fully satisfied under the evidence produced herein; and the same is true of the condition that the accident must be one which ordinarily does not occur unless some one was negligent. We have here no problem of negligence in treatment, but of distinct injury to a healthy part of the body not the subject of treatment, nor within the area covered by the operation. The decisions in this state make it clear that such circumstances raise the inference of negligence and call on the defendant to explain the unusual result. See *Ales v. Ryan*, 8 Cal. (2d) 82, 64 P. (2d) 409; *Broten v. Shortlidge*, 98 Cal. App. 352, 277 P. 134.

The argument of defendants, said the court, is simply that plaintiff has not shown an injury caused by an instrumentality under a defendant's control, because he has not shown which of the several instrumentalities that he came in contact with while in the hospital caused the injury; and he has not shown that any one defendant or his servants had exclusive control over any particular instrumentality. The defendants asserted that some of them were not the employees of other defendants, that some did not stand in any permanent relationship from which liability in tort would follow and that, in view of the nature of the injury, the number of defendants and the different functions performed by each, they could not all be liable for the wrong, if any. We have no doubt, answered the court, that in a modern hospital a patient is quite likely to come under the care of a number of persons in different types of contractual and other relationships with each other. For example, in the present case it appears that Drs. Smith, Spangard and Tilley were physicians or surgeons commonly placed in the legal category of independent contractors; and Dr. Reser, the anesthetist, and the defendant Thompson, the special nurse, were employees of Dr. Swift and not of the other doctors. But we do not believe that either the number or the relationship of the defendants alone determines whether the doctrine of *res ipsa loquitur* applies. Every defendant in whose custody the plaintiff was placed for any period was bound to exercise ordinary care to see that no unnecessary harm came to him, and each would be liable for failure in this regard. Any defendant who negligently injured him, and any defendant charged with his care who so neglected him as to allow injury to occur, would be liable. The defendant employers would be liable for the neglect of their employees; and the physician in charge of the operation would be liable for the negligence of those who became his temporary servants for the purpose of assisting in the operation. In this connection, continued the court, it should be noted that, while the assisting physicians and nurses may be employed by the hospital or engaged by the patient, they normally become the temporary servants or agents of the surgeon in charge while the operation is in progress, and liability may be imposed on him for their negligent acts under the doctrine of *respondent superior*. Thus a surgeon has been held liable for the negligence of an assisting nurse who leaves a sponge or other object inside a patient, and the fact that the duty of seeing that such mistakes do not occur is delegated to others does not absolve the doctor from responsibility for their negligence. See *Ales v. Ryan*, 8 Cal. (2d) 82, 64 P. (2d) 409; *Armstrong v. Wallace*, 8 Cal. App. (2d) 429, 47 P. (2d) 740; *Ault v. Hall*, 119 Ohio St. 422, 164 N. E. 518, 60 A. L. R. 128; and see also *Maki v. Murray Hospital*, 91 Mont. 251, 7 P. (2d) 228. It may appear at the trial that, consistent with the principles outlined, one or more defendants will be found liable and others absolved, but this should not preclude the application of the rule of *res ipsa loquitur*. The control at one time or another of one or more of the various agencies or instrumentalities which might have harmed the plaintiff was in the hands of every defendant or of his employees or temporary servants. This, we think, places on them the burden of initial explanation. The plaintiff was

rendered unconscious for the purpose of undergoing surgical treatment by the defendants; it is manifestly unreasonable for them to insist that he identify any one of them as the person who did the alleged negligent act.

The other aspect of the case, continued the court, that the defendants so strongly emphasize is that the plaintiff has not identified the instrumentality any more than he has the particular guilty defendant. Here again there is a misconception, which, if carried to the extreme for which the defendants contend, would unreasonably limit the application of the *res ipsa loquitur* rule. It should be enough that the plaintiff can show an injury resulting from an external force applied while he lay unconscious in the hospital; this is as clear a case of identification of the instrumentality as the plaintiff may ever be able to make. Under the present facts there can be no justification for the rejection of the doctrine of *res ipsa loquitur*. If we accept the contention of the defendants there will rarely be any compensation for patients injured while unconscious. A hospital today conducts a highly integrated system of activities, with many persons contributing their efforts; e. g., preparation for surgery by nurses and interns who are employees of the hospital; administering of an anesthetic by a physician who may be an employee of the hospital, an employee of the operating surgeon or an independent contractor; performance of an operation by a surgeon and assistants who may be his employees, employees of the hospital or independent contractors; and post-surgical care by the surgeon, a hospital physician and nurses. The number of those in whose care the patient is placed is not a good reason for denying him all reasonable opportunity to recover for negligent harm. It is rather a good reason for reexamination of the statement of legal theories which supposedly compel such a shocking result. We do not at this time undertake to state the extent to which the reasoning of this case may be applied to other situations in which the doctrine of *res ipsa loquitur* is invoked. We merely hold that, where a plaintiff receives unusual injuries while unconscious and in the course of medical treatment, all those defendants who had any control over his body or the instrumentalities which might have caused the injuries may properly be called on to meet the inference of negligence by giving an explanation of their conduct.

Accordingly, the judgment of nonsuit in favor of all the defendants was reversed.—*Ybarra v. Spangard*, 154 P. (2d) 687 (Calif., 1944).

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL*, March 17, page 673.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Part III. Various centers, June. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF INTERNAL MEDICINE: *Written*, Oct. 15. Final date for filing application is Aug. 1. Candidates in the armed forces may take the examination at their station with the permission of their medical commanding officer. Asst. Sec., Dr. W. A. Werrell, 1301 University Ave., Madison 5, Wis.

AMERICAN BOARD OF OBSTETRICS & GYNECOLOGY: *Part II. Oral*, Atlantic City, June 13-19. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

AMERICAN BOARD OF OPHTHALMOLOGY: New York, June 13-16; Chicago, Oct. 4-6; and Los Angeles, January. Sec., Dr. S. Judd Beach, 56 Ivie Rd., Cape Cottage, Me.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Part I. Oral and Written*, New Orleans, Sept. 28-29. New York, Oct. 5-6, Chicago, Oct. 12-13 and San Francisco, Oct. 19-20. Final date for filing application is August 1. Sec., Dr. G. A. Caldwell, 3503 Prytanis St., New Orleans 15.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 3-6. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City, Ia.

AMERICAN BOARD OF RADIOLOGY: *Oral*, New York, June 3. Final date for filing application is May 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: *Written*, Chicago, Dec. 9. *Oral*, Chicago, Feb. 19-22. Sec., Dr. Gilbert J. Thomas, 1409 Willow St., Minneapolis 4.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1935 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

28:689-842 (Dec.) 1944

- Syncope Associated with Exertional Dyspnea and Angina Pectoris. A. Golden.—p. 689.
- *Suggestion for Improving Structure of Cardiac Coronary Circulatory System Without Surgical Intervention. J. A. Amadeo.—p. 699.
- Cardiac Hypertrophy of Unknown Cause: Study of Clinical and Pathologic Features in 10 Adults. R. L. Levy and W. C. Von Glahn.—p. 714.
- Unusual Conditions Involving Abdominal Aorta: 7 Cases with Autopsy Observations. N. E. Reich.—p. 742.
- Effects of Emetine on Electrocardiogram. M. Hardgrove and E. R. Smith.—p. 752.
- *Increased Capillary Fragility in Hypertension: Incidence, Complications and Treatment. J. Q. Griffith Jr. and M. A. Lindauer.—p. 758.
- Blood Pressure in Arm and Thigh of Man: I. Study of Averages, Variations and Differences Between Thigh and Arm. E. E. Gambill and E. A. Hines Jr.—p. 763.
- Id.: II. Hydrostatic Influences. E. E. Gambill and E. A. Hines Jr.—p. 773.
- Id.: III. Effect of Venous Engorgement. E. E. Gambill and E. A. Hines Jr.—p. 777.
- Id.: IV. Blood Pressure in Exercised Extremities. E. E. Gambill and E. A. Hines Jr.—p. 782.
- Effect of Renal Vein Occlusion on Blood Pressure of Dog. Louise Friedberg.—p. 786.
- Momentary Atrial Electrical Axes: I. Normal Sinus Rhythm. G. M. Decherd and A. Ruskin.—p. 794.

Improving the Coronary Circulation.—Among the poor in the rural mountainous sections of Puerto Rico Amadeo observed a high incidence of anemia due to Uncinariaria and to protein deficiencies in the diet. These anemic peasants walked several miles up and down hill with great ease. It seemed impossible for any heart to stand the enormous double strain of severe anemia and violent exercise. Furthermore, among 1,565 white poor patients over 45 years of age from these rural areas observed in his general medical practice during four years there was not a single case of angina pectoris due to coronary disease, whereas among 453 white well-to-do patients over 45 observed during the same four years there were five deaths from coronary disease. The two groups belong to the same race (white Puerto Ricans) and live in the same geographic environment (1,500 to 2,500 feet above the sea level). They differ only in the uncinariasis (ancylostomiasis) and anemia. Observations, and particularly a search for hemic murmurs, convinced the author that the hearts of the poor peasants compensate and preserve functional efficiency in the presence of anemia without weakening, dilating or developing hemic murmurs. The author suggests that moderate, temporary anemia may exert a beneficial effect on the heart by compelling it to develop some compensatory mechanism that continues to function throughout life and allows the heart to tolerate the myocardial anoxia that develops from subsequent anemias, as well as from exertion or coronary sclerosis.

Increased Capillary Fragility in Hypertension.—Griffith and Lindauer measured the capillary fragility by means of the petechial index of Göthlin in patients with hypertension. They found that capillary fragility was increased in about 18 per cent of 265 cases of hypertension. Persons with increased capillary fragility were especially predisposed to apoplexy, retinal hemorrhage and death. Thiocyanate increased an abnormal fragility already present and in certain cases caused an increase in a normal fragility. When this occurs, thiocyanate may be a factor in the causation of apoplexy and other hemorrhagic phenomena. Hesperidin and hesperidin methyl chalcone restored increased capillary fragility to normal in about 84 per cent of

cases. These drugs may reduce the frequency of the complications of increased capillary fragility. Thiocyanate should not be given to persons with increased capillary fragility until that fragility has become normal as the result of treatment.

American J. Digestive Diseases, Fort Wayne, Ind.

12:1-32 (Jan.) 1945

- Fasting Blood Sample Procedure in Differential Diagnosis and Management of Hepatic Disease. D. Schwimmer, S. D. Klotz, I. J. Dreker and T. H. McGavack.—p. 1.
- Hydrochloric Acid Therapy in Achlorhydria. E. Frankel.—p. 15.
- Gastrointestinal Allergy. L. Pelner.—p. 17.
- Vitamin E vs. Wheat Germ Oil. E. Levin.—p. 20.
- Failure of Intestinal Bacteriostasis Following Administration of Pectin to the Rat. B. H. Ershoff and H. B. McWilliams.—p. 21.
- Advantages and Disadvantages of Old and Newer Insulins. L. Bauman.—p. 23.

American Journal of Diseases of Children, Chicago

68:369-454 (Dec.) 1944

- *Salicylate Intoxication: Studies on Effects of Sodium Salicylate on Prothrombin Time and Alkali Reserve. Gladys J. Fashena and J. N. Walker.—p. 369.
- Oxymuriasis: Clinical Survey of 200 Consecutive Cases of Infection with Enterobius Vermicularis in Children. J. F. Miller and N. H. Einhorn.—p. 376.
- Generalized Cutaneous Monilial Infection. A. Strickler.—p. 382.
- *Primary Tuberculosis: Effect of Unrestricted Activity on Prognosis. M. I. Levine.—p. 385.
- Illness History and Physical Growth: II. Comparative Study of Rate of Growth of Preschool Children of Five Health Classes. Mary Elizabeth Evans.—p. 390.

Salicylate Intoxication.—Fashena and Walker report the occurrence of salicylate poisoning during the treatment (by the Coburn method) of a patient with acute rheumatic fever. After the acute rheumatic fever had been diagnosed, the patient, a Negro boy aged 9 years, was given 6 Gm. of sodium salicylate daily. After four days of this treatment all evidence of involvement of the joints had disappeared, but when administration of the drug was stopped pain appeared in both shoulders and in the joint of the right elbow. Four days later, administration of sodium salicylate in oral doses of 8 Gm. a day was resumed, with prompt disappearance of the symptoms in the joints. After forty-eight hours of drug therapy at this higher level the patient developed hyperpnea. Nausea and vomiting appeared on the third day of therapy at the higher level, and disorientation and hallucinations supervened on the sixth day. On the seventh day the patient appeared gravely ill. The hyperpnea showed no response to oxygen or to change in posture. Examination of the blood revealed hypoprothrombinemia, which was partially controlled by daily parenteral doses of 1 mg. of synthetic vitamin K. The authors report experimental studies on the blood salicyl level in 6 children. To achieve blood salicyl levels of the order of 350 micrograms per cubic centimeter, sodium salicylate has to be administered in amounts which border on toxic doses for children. Evidence suggests that after an initial twenty-four hour period of large doses the amount given may be reduced without subsequent diminution in blood salicyl level. It is desirable that the Coburn treatment for rheumatic fever be controlled by repeated estimations of the blood salicyl level in order to attain maximum therapeutic effectiveness with minimal doses. Sodium salicylate regularly induces hypoprothrombinemia, which may regress spontaneously as treatment continues. Large doses of vitamin K appear to prevent the development of prothrombin deficiency and to hasten its restoration to normal levels when the deficiency is already present. Sodium salicylate as well as other compounds of salicylic acid should be administered to children with due regard for the hypoprothrombinemia and the acid-base changes which they may produce without overt signs. The concomitant administration of vitamin K is indicated.

Unrestricted Activity in Primary Tuberculosis.—Levine reviews data that were accumulated during an investigation on tuberculosis in childhood, carried on from 1926 to 1942 in New York City. Ninety infants were observed before, during and after their primary complex. Twenty-seven of these had the primary pulmonary lesion with perifocal infiltration and went through the active phase of primary complex before they were 12 months of age. These infants were classified as nonambulatory; 16 of them died from tuberculosis and 1 had tuber-

culosis of the hip. All except 3 of the 63 remaining infants were ambulatory throughout the primary complex in spite of the size of the pulmonary infiltration. Of these 60 ambulatory patients only 4 died from tuberculosis and only 2 had complications—tuberculosis of the cervical nodes in 1 instance and multiple hematogenous lesions in the other. Of the 3 hospitalized patients 1 died from tuberculosis and 1 had tuberculosis of the spine. Rest in bed did not influence the course of the primary complex or reduce the incidence of complications, nor was there evidence that lack of rest in bed was detrimental. The age of the child at the time of infection rather than the method of treatment seems to be the important factor in determining prognosis. Contact with a tuberculous mother during the first year was much more dangerous than contact with a tuberculous father. Rest in bed during a primary infection with tuberculosis should be limited only to the period of elevation of temperature, as in the treatment of any febrile condition during childhood.

Archives of Surgery, Chicago

49:367-436 (Dec.) 1944

- Wounds of Chest in Pacific Jungle Warfare. Review of 32 Cases. H. G. Hardt Jr.—p. 367.
Laboratory Course in Thoracic Surgery. Exercises in Performance of Surgical Procedures on Thorax, with Discussion of Their Clinical Applications. E. Holman and W. L. Rogers—p. 373.
Paralysis of Larynx. Early Sign of Recurrence Following Radical Mastectomy for Carcinoma, with Report of 6 Cases. J. R. Fox—p. 388.
Complete Rupture of Supraspinatus Tendon. Simplified Operative Repair. L. Jones—p. 390.
Progress in Orthopedic Surgery for 1943. XVI Conditions Involving Lower Part of Back. H. H. Kuhn—p. 399.
Id. XVII Infections of Bones and Joints. P. C. Colonna—p. 402.
Review of Urologic Surgery. A. J. Scholl and others—p. 415.

Paralysis of Larynx After Carcinoma of Breast.—Fox reports 6 cases of surgically treated cancer of the breast in which a period of complete symptomatic freedom from disease followed mastectomy. This period varied from fourteen months to twelve years. The patient's well-being was then suddenly interrupted by changes in the voice, described as persistent hoarseness or huskiness. There were also intermittent weakness of the voice, a tendency for the voice to crack and a nonproductive cough, unaccompanied by evidence of infection of the respiratory tract. Dyspnea was severe in 1 patient and was experienced on exertion by the others. In each instance it was the laryngeal disturbance which caused the patient to consult her physician. Hoarseness occurring after radical mastectomy for carcinoma of the breast is often the first clinical evidence of metastasis. Metastasis from carcinoma of the breast causes paralysis of the recurrent laryngeal nerve on the same or on the opposite side by involving the chain of lymph nodes surrounding the recurrent laryngeal nerve.

Connecticut State Medical Journal, Hartford

9:1-78 (Jan.) 1945

- Recent Advances in Treatment of Heart Disease. L. H. Nahum and S. D. Dorf—p. 3.
School Health Problems as Seen in Pediatric Clinic. G. I. Powers—p. 11.
Methods of Evaluating School Health Programs. M. Derryberry—p. 19.
Metastatic Malignancy Treated by Radical Methods. E. L. Lawrence—p. 23.
Narcotherapy in Hysterical Reactions. Intravenous Use of 2.5 per cent Pentothal Sodium Solution. L. H. Gold—p. 24.
Pilonidal Cyst. Report of 6 Cases and Comment on Treatment by Injection. D. J. Knowlton—p. 28.
Psychiatric Problems of Returning Soldier and Their Medical Management. W. B. Terhune—p. 29.

Minnesota Medicine, St. Paul

28:1-88 (Jan.) 1945

- Preoperative and Postoperative Management of Poor Risk Infant or Child. E. S. Pitou—p. 29.
Preoperative and Postoperative Care of Aged Surgical Patients. O. I. Solhlberg—p. 32.
Preoperative and Postoperative Care of Bad Risk Patient. R. W. McNealy—p. 34.
Malignant Growths of Mucoid Process and Middle Ear. I. A. Figt and B. E. Hempstead—p. 38.
Virus Pneumonia. Resume and Therapeutic Suggestion. H. J. Wolff—p. 43.
Vaginal Ulcers. Study of 143 Cases. C. L. Holmes and T. L. Smith—p. 46.

New Orleans Medical and Surgical Journal

97:291-334 (Jan.) 1945

- Diagnostic and Therapeutic Possibilities of Broncho-cop. G. J. Taquino.—p. 291.
Carcinoma of Larynx. F. E. LeJeune—p. 298.
Role of Roentgen Pelvimetry in Management of Pelvic Contradiction. E. L. King—p. 302.
Cause of Syncope with Special Reference to Heart. W. A. Sodeman and H. T. Englehardt—p. 307.
Dissecting Aneurysm of Aorta in Boy. J. W. McLaurin—p. 317.
What Makes Medicine Psychosomatic? S. Nelken—p. 319.
Intestinal Obstruction Following Use of Cotton. Case Report. V. D'Ingranno—p. 322.

Physiological Reviews, Baltimore

25:1-202 (Jan.) 1945

- Effects of Oxygen at Increased Pressure. J. W. Bern—p. 1.
*Certain Animal Venoms and Their Physiologic Action. H. E. Essex.—p. 148.
Neurosecretion. E. Scharrer and B. Scharrer—p. 171.
Inorganic Industrial Hazards. L. T. Fairhall—p. 182.

Animal Venoms.—Essex discusses the effects of bee stings and also bee venom as a therapeutic agent and considers in turn scorpions, spiders and finally reptiles, particularly snakes. Discussing these poisonous animals and their venoms, he considers the chemistry, pharmacology, symptomatology, pathology, treatment and immunity and also the use of the poisons as therapeutic agents.

Review of Gastroenterology, New York

11:381-439 (Nov.-Dec.) 1944

- *Hepatotoxic Effects Following Occupational Exposure to Halowax (Chlorinated Hydrocarbons). N. Strauss—p. 381.
Digestive Disturbances of Negro Soldier as Seen in Large Army General Hospital. A. A. Kirschner—p. 397.
Spontaneous Internal Biliary Fistulas. Case Report of Perforation of Gallbladder into the Stomach. A. Slinger—p. 409.
Regional Ileitis or Enteritis. L. Felner—p. 412.

Hepatotoxic Effects of Chlorinated Hydrocarbons.—A man aged 50, while working in a defense plant, had been exposed to the fumes of Halowax, a chlorinated hydrocarbon. After three months of exposure he developed a Halowax dermatitis and three months later, that is, six months after exposure to the fumes, he became jaundiced and was hospitalized. He died two months later. The cause of death was cirrhosis of the liver due to subacute necrotizing hepatitis (acute yellow atrophy of the liver). This case led to an investigation of the literature on the toxic effects of exposure to the various chlorinated hydrocarbons. Strauss discusses animal experiments and reviews Drinker's observations on 3 workers of the Halowax Corporation who died of jaundice following exposure to Halowax. He cites a report by Greenburg and his associates of 3 workers dying of acute yellow atrophy following occupational exposure to chlorinated naphthalenes. He also cites a nonfatal case of poisoning by chlorinated naphthalenes. The clinical histories of 5 patients with a history of exposure to the fumes of chlorinated hydrocarbons are presented. All showed a drop in the serum albumin and total proteins. The author stresses that if a worker develops jaundice or Halowax dermatitis he should be immediately removed from possible contact with the vapors of the chlorinated hydrocarbons. He should be placed on a high protein diet and given several transfusions of either whole blood or plasma. He should never be permitted to return to the same occupation or to one that subjects him to the inhalation of carbon tetrachloride or its allied compounds.

Union Médicale du Canada, Montreal

74:1-136 (Jan.) 1945

- Hematemesis Without Ulcerous or Cancerous Involvement of the Gastro-duodenal Mucosa. R. Boucher—p. 2.
Endometriosis. L. Gerin Lajoie—p. 13.
Industrial Accidents and Syphilis. A. Marin—p. 18.
Pneumococcal Meningitis Cured by Penicillin. R. Amiot—p. 21.
Ludwig's Angina. Case. A. Latraverse—p. 24.
Terebrating Lethyria or Scrofulous Patient. Rare Form of Tuberculosis. P. Poirier—p. 32.
Interaction of Myocardium. Consideration of Case. A. Pager and M. Papineau—p. 34.
Hormonal Treatment of Acne. F. Simon—p. 37.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

25:135-192 (Oct.) 1944

- Investigation into Production of Bacteriostatic Substances by Fungi: Preliminary Examination of Fourth 100 Species, All Penicillia. W. H. Wilkins and G. C. M. Harris.—p. 135.
- Mammary Tumor Inducing Factor and Genetic Constitution. L. Dmochowski.—p. 138.
- Infection of Mice with Mycobacterium Tuberculosis (Bovis) by Respiratory Route. R. E. Glover.—p. 141.
- Magnesium Potentiation of Adenosine Triphosphate Shock and Other Shock Inducing Measures. H. N. Green and H. B. Stoner.—p. 150.
- Muscular Fatigue in Albino Rat, and Its Relationship to Thyroid. J. L. Malcolm and V. I. E. Whitehead.—p. 160.
- Nucleic Acid and Nucleotide Content of Tumors. J. N. Davidson and C. Waymouth.—p. 164.
- Sensitization to "Tetryl." P. G. H. Gell.—p. 174.

British Journal of Radiology, London

17:323-354 (Nov.) 1944

- *Stress Fractures of First Rib. B. R. Alderson.—p. 323.
- Dosage Rate in Radiotherapy. L. H. Gray, F. Ellis, G. C. Fairchild and Edith Paterson.—p. 327.
- Observations on Opaque Myelography of Lumbar Disk Herniations. D. C. Eaglesham.—p. 343.
- The Action of Neutrons on Bacteria. F. G. Spear.—p. 348.
- Stellate Translucencies as a Sign of Gallstones. A. S. Johnstone.—p. 352.

Stress Fractures of the First Rib.—In 55,451 routine fluorographic examinations at a naval establishment, Alderson observed 35 men who had a condition in one or both of their first ribs which at first, for want of a better term, was described as "an anomaly of the first rib." The appearance of the lesion varied considerably in most respects except its situation, which was invariably just proximal to the scalene tubercle. Some of the cases showed an irregular transverse or oblique break in the continuity of the rib associated with a fusiform swelling around the lesion, showing the radiologic characteristics of callus in varying degrees of formation. Others appeared to be of much longer standing, and the surrounding swelling appeared to be fully formed bone. Each patient was interrogated as to history and symptomatology. The sixteenth patient first gave the elements of credence to the hypothesis that the condition might be related in its etiology to other types of stress fracture. Only 5 patients volunteered significant symptoms and history. Of these, 2 gave a history of "sudden pain in the shoulder" occurring shortly after strenuous physical training, 2 admitted direct trauma some years previously, and the fifth stated that prior to entry into the service he had carried 1 cwt. (51 Kg.) bags of coal on his shoulder and had complained of a sore shoulder for the first week or two. The evidence suggests that the abnormality is a stress fracture of the first rib.

Journal of Hygiene, London

43:363-434 (Sept.) 1944

- Studies in Dynamics of Disinfection: II. Calculation of Concentration Exponent for Phenol at 35 C. with Bact. Coli. as Test Organism. R. C. Jordan and S. E. Jacobs.—p. 363.
- Some Bacteriologic Aspects of Dehydrated Foods. R. B. Haines and E. M. L. Elliot.—p. 370.
- Germicidal Mists and Vapors in Air Disinfection. A. H. Baker and C. C. Twort.—p. 382.
- Factor Analysis as Aid to Nutritional Assessment. W. H. Hammond.—p. 395.
- *Some Epithelial Changes in Fluorosis. L. Spira.—p. 400.
- Incidence of Dystrophies Caused by Fluorine in Organs Regulated by Parathyroid Glands. L. Spira.—p. 402.
- Application of Principle of Partial Pressure of Gases to Haldane's Method of Stage Decompression. G. W. M. Boycott.—p. 409.
- Typing of Strains of Bact. Paratyphosus B by Biochemical Method of Kristensen and Bojlen. Jean MacNaughtan.—p. 411.
- Cytologic Observations on Bact. Coli, Proteus Vulgaris and Various Aerobic Spore Forming Bacteria, with Special Reference to Nuclear Structures. C. F. Rohinow.—p. 413.
- Bacteriology of Activated Sludge. L. A. Allen.—p. 424.

Epithelial Changes in Fluorosis.—Spira says that the action of fluorine is known to consist in its ability to precipitate calcium salts stored in the body, material indispensable for sustaining the vitality of most of the organic functions. The protracted ingestion of toxic amounts of this halogen may bring about the reduction of calcium in both blood and tissues to a dangerous level. The lesions may be produced by fluorine

attacking tissues directly, or fluorine may interfere with the normal function of the parathyroids. Spira asserts that fluorine is contained in aluminum cooking utensils and in drinking water. The action of fluorine consists in lowering the level of the calcium in the blood and tissues. The epithelium of the mouth and the salivary glands, of the nasopharynx, the conjunctivas and the lacrimal glands may be affected. Signs and symptoms are thus produced which are closely similar to those usually attributed primarily to infection. It is suggested that an infection accompanying chronic fluorine poisoning is of a secondary nature and that it is brought about by the loss of calcium in the body.

Journal of Laryngology and Otology, London

59:117-169 (April) 1944

- Conservative Treatment of Chronic Suppurative Otitis Media in Adults. T. M. Banham.—p. 117.
- Gastroenteritis and Mastoiditis in Infants. B. Cohen.—p. 136.
- Meningitis Following Mastoid Infection by Bacillus Proteus. M. Sugar.—p. 146.

Medical Journal of Australia, Sydney

2:397-420 (Oct. 14) 1944

- *Tropical Diseases in Returned Soldiers. H. H. Turnbull.—p. 397.
- Experiences with Mobile Surgical Team on an Amphibious Operation in New Guinea.—p. 402.
- Dagmar Berne: The First Woman Student in the Medical School of University of Sydney. R. S. Skirving.—p. 407.

2:421-444 (Oct. 21) 1944

- Medicinal Induction of Labor and Induction in Postmaturity. W. I. Hayes.—p. 421.
- Indications for Surgical Induction of Labor. W. D. Saltan.—p. 424.
- Methods of Surgical Induction of Labor. A. M. Hill.—p. 425.
- Comparison Between Surgical Induction of Labor by Means of Rectal Tube and Surgical Induction of Labor by Artificial Rupture of Membranes: Statistical Survey. Margaret A. Mackie.—p. 428.
- Bacteriologic Diagnosis of Bacillary Dysentery by Means of Rectal Swabs. A. A. Ferris and C. Fortune.—p. 430.
- Simple Method of Obtaining "One Way" Vision and Audition. F. V. Smith.—p. 433.

Tropical Diseases in Returned Soldiers.—Turnbull stresses that tropical diseases which Australians contracted in the war in New Guinea will force themselves on the attention of the practitioner at home. The present routine course of treatment followed by 0.1 Gm. of atabrine per day for six weeks will produce cure of malignant tertian malaria in almost 100 per cent of cases. This does not apply to benign tertian malaria; there is no drug that will cure this infection, although the routine treatment rarely fails to terminate an attack and the maintenance course of atabrine will stave off early relapse. Every soldier who lands in Australia from New Guinea or the islands is given a supply of atabrine sufficient to last for six weeks, with instructions to take one tablet every day. If he does this he will not die of malignant tertian malaria, and he almost certainly will not develop an attack of benign tertian malaria, though a relapse due to benign tertian is likely to develop about three weeks after he stops taking his drug. If, however, he is careless and fails to take his tablet each day, he is likely to have a malarial attack which may be a sudden and intense cerebral attack or some other form of malignant tertian infection producing a rapidly fatal result. This has happened in 4 or 5 cases, and other men have been admitted urgently to military hospitals and saved by prompt and vigorous treatment. It is therefore important that all medical practitioners should aid by stressing this danger to all whom they can influence, because many men are encouraged by their friends and relatives to give up taking their tablets under the plea that they are harmful or unnecessary. Two statements gave some trouble. These were that (1) atabrine will cause sterility in some men who take it and (2) atabrine damages the liver. There is no evidence in favor of either statement. If all doctors preach the great importance of continuing suppressive treatment with atabrine, tragedies and near tragedies from cerebral malaria will be reduced greatly. When a man is infected with malaria many things tend to cause an attack, such as chill, cold bathing, another illness, blood loss, anesthesia and operation, and such relapses are apt to occur for a period of three years or more after the patient leaves a malarious area.

Book Notices

Principles and Practices of Inhalational Therapy. By Alvan L. Barach, M.D., Associate Professor of Clinical Medicine, Columbia College of Physicians and Surgeons, New York. Fabrikoid. Price, \$4. Pp. 315, with 59 illustrations. Philadelphia, London & Montreal: J. B. Lippincott Company, 1944.

This is the first complete handbook on inhalational therapy written by a physician with wide experience in the application of physical principles to clinical medicine. The first chapter deals with the historical and physiologic background of the therapeutic use of oxygen, carbon dioxide, helium, positive pressure, lung immobilization and vaporized solutions of epinephrine and neosynephrine. In the next thirty chapters the author discusses the pathologic physiology and specific inhalational treatment of various diseases, including pneumonia, pulmonary edema, congestive heart failure and bronchial asthma. Methods of inhalational therapy and technics of gas analysis are described in the last seven chapters, with clear illustrations and practical guidance in the choice of apparatus. The book will be useful to physicians and technicians who are responsible for the therapeutic use of gases in clinical medicine and in many phases of war medicine as well.

Manual of Human Cross Section Anatomy. By Dudley J. Morton, M.D., Associate Professor of Anatomy, Department of Anatomy, College of Physicians and Surgeons, Columbia University, New York. Second edition. Cloth. Price, \$6. Pp. 211, with illustrations. Baltimore: William Wood & Company, 1944.

The second edition of this popular manual of human cross section anatomy retains all of the material included in the first and contains several additions for the convenience of the student. A much smaller and more compact volume than the first edition, it nevertheless contains reproductions of ninety cross sections through the head and neck, thorax and abdomen, female abdomen and pelvis, upper extremity, thigh and leg, ankle and foot, sixteen key figures and forty-one pages for notes, including seven pages with outline drawings for recording sensory areas of the skin and arterial anastomoses about joints.

The manual is designed for flexibility of use either by the individual student or for a formal class, to provide a personal reference work book for the student and to stimulate the student to think in terms of three dimensional relationships with the minimum of time and effort.

If used under proper supervision in connection with adequate material and reference books, this manual may be of some value as one of many accessories in the teaching of cadaver anatomy. As a reference book the manual has certain defects: Sometimes successive cross sections are too far apart for completeness and to indicate continuity and relationships in the third dimension; the specimen used for the female pelvis is abnormal or atypical. As a work book the manual is in the nature of a picture puzzle book, requiring little thought or effort on the part of the student.

The aim of anatomy is the knowledge and understanding of the structural relationships of the living human body. Only the dead body can be completely dissected, and the cadaver relationships must be interpolated into the living condition. Modern roentgenologic methods have made this possible, whereas cross sections serve to emphasize the cadaver relationships and so have receding value in the modern teaching of anatomy. Consequently such a manual of cross section anatomy, though it makes the interpretations of cross sections easy and interesting, will be of minor value except where a lack of material, modern equipment or time for the thorough study of anatomy exists.

Proteins and Amino Acids: Physiology, Pathology, Therapeutics. Cloth. Grátis to Medical Profession. Pp. 189. Yonkers, New York: Arlington Chemical Company, 1944.

This little book has been prepared to present a comprehensive digest of the known facts concerning the participation of protein in body processes. The important contributions on protein found in the literature up to June 1944 are effectively organized under subject headings and the essential facts from the original works accurately reported. The first sections deal with the physiology of protein and establish a basis of understanding for the cause-relationship and therapeutic usage of

protein in disease conditions which is discussed later. Editorial discussion and opinion based on information gained in reading the extensive bibliography and from conferences with the leaders in the various fields convey the information to the reader in a simple, easily read manner. The main objective of the monograph is to bring together the impressive amount of data on the importance of adequate protein supplies in the treatment of numerous disease conditions. This purpose is well served. The factual information, briefly and concisely presented, as well as the extensive references found in this book should make it attractive to the physician and nutritionist.

The Measurement of Adult Intelligence. By David Wechsler, Chief Psychologist, Bellevue Psychiatric Hospital, New York. Third edition. Cloth. Price, \$3.50. Pp. 253, with 12 illustrations. Baltimore: Williams & Wilkins Company, 1944.

One of the most serious criticisms of earlier editions of this well known and accepted battery of intelligence tests devised for adults rather than for children was that the tests given were not standardized on a sufficient number of persons. This situation has now been corrected to some extent, but the type of cases used leads to statistical misinterpretations. In addition there are some defects in the author's concepts of test formation, particularly the idea that there is such a thing as mental alertness that can be measured. Wechsler argues that his test is a good measure of intelligence because experience has shown it to be so, and the experience of the reviewer is that this is not an acceptable statement. In many instances the test results are too high when weighed against the psychiatric evaluation. The fact that the test is weighted for adults causes the author to make certain concessions which are not acceptable: the slightly deteriorated or elderly adult reacts higher than his actual mental function. Mental defectives are also rated higher than they would be on other tests, and most clinical psychiatric evaluations indicate that the Wechsler examination rates defective persons too high. The test procedure and the criteria for evaluating the answers are included in the book. For the skilled examiner who can select tests effectively to suit various problem individuals, the Wechsler test is a very satisfactory one. For general use the psychiatrist might well be cautious in accepting results obtained by any but the most highly trained clinical psychologist.

Diagnóstico topográfico de los procesos pleuropulmonares: Estudio anatómico, clínico y radiológico. Por el Dr. Juan Soto Blanco, profesor agregado de cirugía, cirujano del Instituto. Facultad de medicina de Montevideo, Instituto de fisiología "Prof. Dr. J. B. Morelli." Colección de monografías. Monografía N° 1. Paper. Pp. 106, with illustrations. Montevideo, 1944.

This is one of a collection of monographs published under the auspices of the Dr. J. B. Morelli Institute of Tuberculosis of the Faculty of Medicine of Montevideo. Much valuable radiologic research has been done in the University of Montevideo. The findings in the present research do not suggest any need of change in our conceptions of the anatomic divisions of the lung and their landmarks as seen on the roentgenograms. The numerous interesting cases reported and illustrated by anatomic and radiographic demonstrations emphasize the fact that the postoperative result of pleuropulmonary surgical operations is in great part dependent on correct topographic and etiologic diagnosis. An understanding of the bronchial system is of the greatest importance. For this the author uses bronchography, with screen and film studies in multiple positions.

Family Health Service in Tuberculosis: A Supplement to Guide No. 3 on Tuberculosis. Family Health Series Guide for Public Health Nurses No. 3A. Paper. Pp. 47, with illustrations. New York: Community Service Society, Department of Educational Nursing, 1944.

This is a pictorial representation in posed photographs of the work of the public health nurse in the handling of a case of open tuberculosis in which a delay is encountered in finding sanatorium accommodations. Home technics for the avoidance of infection are demonstrated. The role of the nurse in arranging sanatorium care and the necessary social services is explained. It is a good job of clear exposition. The photography is good and the brief accompanying captions are clear and concise. The pamphlet should be of use to public health agencies dealing with tuberculosis and to physicians in the same field.

ANSWER.—The number of cases treated by calomel and phenolphthalein is too few from which to draw any definite scientific conclusions. After clinical manifestations have presented themselves, poliomyelitis is much like the other virus diseases, such as measles, chickenpox, mumps and smallpox. None of these diseases can be altered in any way by drugs, chemical or serum, and the possible removal of virus from the alimentary canal cannot affect virus already in the central nervous system. There is no evidence that a purge completely cleans the alimentary canal of virus. The 3 consecutive cases of poliomyelitis referred to might easily all be nonparalytic regardless of any treatment, while the next 5 might all be serious and perhaps even fatal. Many authorities who specialize in the treatment of poliomyelitis patients believe that the giving of drastic purges to such patients is not without danger. Cathartics, in cases in which an inability to empty the bladder and bowel has developed, many times cause increased peristalsis and abdominal cramps, often harming the patient's ability to empty the bowel.

